

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

OUR PACIFIC COM- MUNICATIONS

BY GEORGE BRONSON REA

THE NORDIC SNOB

DISCOVERING ADMIRAL BRISTOL

REGIONAL GOVERNMENT FOR CHINA

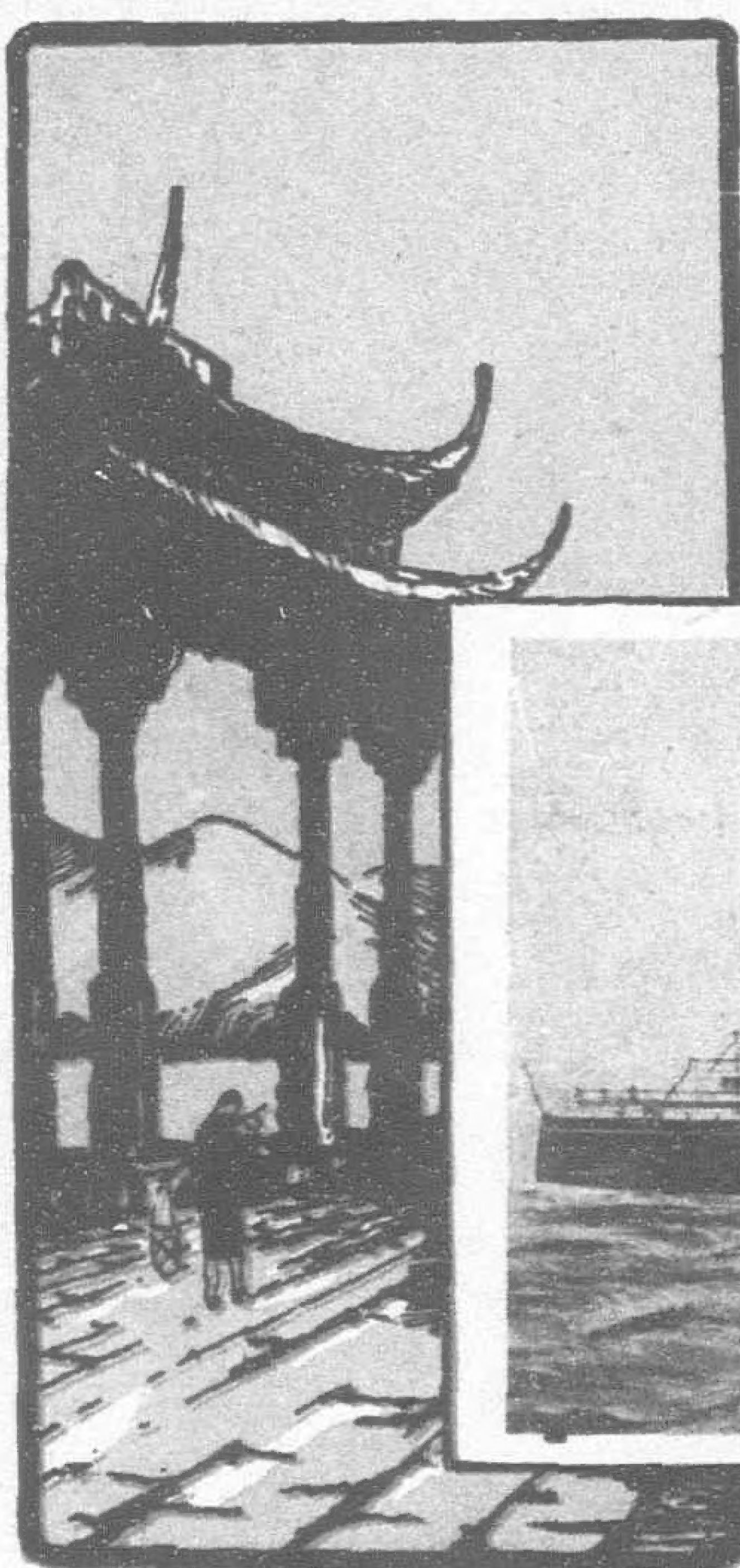
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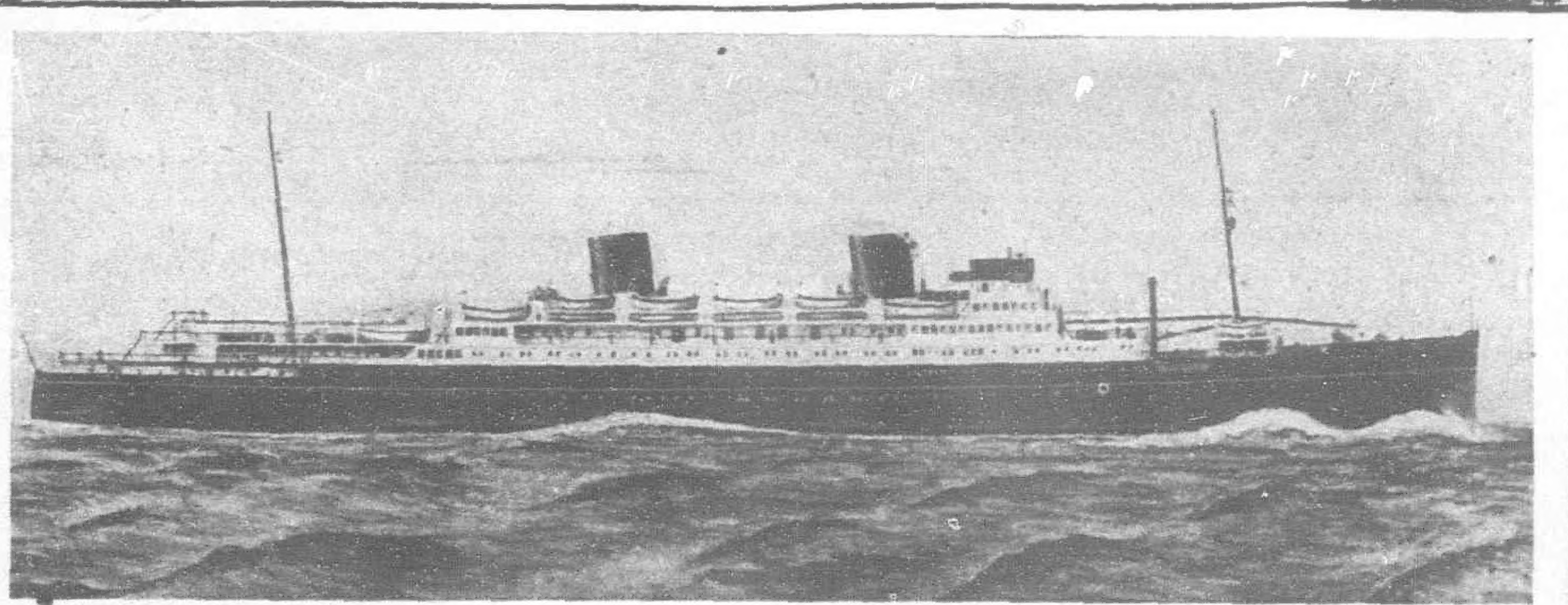
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SHANGHAI, PEKING, TOKYO AND MANILA



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The Far Eastern Review

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VOL. XXIII

SHANGHAI, NOVEMBER, 1927

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Our Pacific Communications

American Public Opinion Demands Increased Cable and Radio Facilities

By George Bronson Rea

FOREWORD: The recent announcement that the Western Union Telegraph Company would lay a new high-speed cable under the Pacific, linking the United States with China has created a renewed interest in our communications with the Far East. The decision was arrived at during the recent crisis in China when our government was unable to keep itself fully and promptly informed of the rapid changes in the situation. It is also the belief of the Western Union Telegraph officials that the trade of the United States is now to reach out towards the Orient rather than to Europe and that great developments in that direction are to be expected in the near future. In the opinion of President Carleton, commercial requirements alone fully justify the extension of our Pacific communications, a need that was accentuated by the recent events in China when European capitals had the advantage of being served by three cable lines while Washington had to rely on one slow-speed cable linking China with the United States.

The Western Union cable and radio plans are announced at a time when the long drawn out dispute between the Mitsui Company of Japan and the Radio Corporation of America is still unsettled. This clash of interests is the only outstanding question between the American and Japanese governments. In order to more fully explain the American position, Mr. Manton Davis, the assistant attorney-general of the Radio Corporation, recently read a paper before the Institute of Pacific Relations at Honolulu, in which he suggested a round-table conference between the Americans and Japanese with a view of arriving at an amicable adjustment of their differences through co-operation.

The situation is complicated by the fact that the Japanese company has carried out its contract and erected a high-powered wireless station at Peking while the American company, due to no fault of its own has as yet been unable to start work on its station at Shanghai. In fact, to date, it has been heavily penalized in out-of-pocket expenses in protecting its contract, and, due to the obstacles placed in its path, the American people and government have been deprived of a rapid and efficient communications service with China which the events of the past year have made imperative for the proper protection of our interests in that country. In the meanwhile, both the Japanese and American rights are being undermined and rendered worthless by the erection of a new work of wireless stations throughout China some of which, like the one in Canton, are able to communicate with Europe and possibly the United States.

The Open Door and China's Sovereignty

The Crux of the Radio Dispute

All factions in China are united in demanding an immediate revision of the so-called unequal treaties, and whenever a government representative of the whole country is established, this issue must be faced by the foreign Powers. Under new treaties, foreign trading rights in China will be defined and governed by the most favored nation treatment. The Open Door Doctrine will automatically disappear and no foreign government will be justified in interfering with China's freedom of action in making contracts, granting concessions or establishing monopolies.

Briefly stated, the Open Door doctrine is an international understanding to respect the principle of equal opportunity for the commerce of all nations in China, binding upon those Powers who accepted John Hay's original proposals and upon those who subsequently incorporated the principle in their various Far Eastern agreements. It is highly important to remember, however, that previous to the Washington Conference, China herself had never become a party to the many interlocking treaties and agreements establishing and defining the doctrine. In fact, while outwardly acquiescing in its principles, the Chinese Government insisted that these interchanges of foreign diplomatic correspondence constituted a direct intervention in its affairs. The record proves conclusively that the Chinese Government reserved the right to exercise its own discretion in the matter of loans, development contracts and industrial concessions. China could not admit the right of other Powers to intervene in such matters without completely surrendering her sovereignty and in some cases invalidating agreements previously entered into.

When, in 1899, John Hay promulgated the Open Door Doctrine and committed the other Powers to respect the territorial integrity of the Chinese Empire, the Empress Dowager had already surrendered her sovereignty over Manchuria under the terms of a secret alliance with Russia, signed in 1896. China could not therefore in 1899, extend its approval or adhere to the Hay proposals without repudiating this alliance and inviting swift and certain punishment for her perfidy. China was caught in the web of Li Hung-chang's secret diplomacy and dared not endorse a doctrine devised by the American Secretary of State for her protection. Other Powers, at America's invitation, could and did exchange communications creating a principle for the protection of their mutual trade interests, but China could not then, or at any time during the fifteen years life of the secret treaty with Russia, approve any international convention conflicting with her existing obligations. The history of China's railway and loan negotiations indicates in no uncertain manner that never did she subscribe to a doctrine which impaired and at times even denied her independence of action in matters closely connected with her sovereign rights.

To this refusal of the Powers to recognize China's position, is traceable the many foreign diplomatic disputes over loan and development contracts, and to some extent, her present attitude on the unequal treaties. When these international agreements denied to China the full exercise of her sovereign powers in developing her industries and communications, they over-stepped their original purpose and became, in the opinion of the Chinese, an intolerable intervention of their affairs.

Open Door and Railway

A case in point occurred during the early months of 1924, when the American State Department, for reasons which have never been explained, denied China's right to contract with an international finance and construction company to build a 10,000 mile system of new national railways. The State Department held that such a contract constituted a monopoly of railway construction in China and as such violated the treaties which prohibited monopolies.

Notwithstanding that a reputable American construction firm backed by strong financial interests, enjoyed equal participation in the enterprise, Secretary Bryan refused to support it. In the opinion of President Yuan Shih-kai, this constituted an unwarranted interference in the sovereign affairs of his government.

China's attitude toward the Open Door doctrine was clearly set forth in the Siems-Carey railway contracts in 1916, in which the Chinese Minister of Communications specified five railway lines for the Americans to build, conflicting with rights previously ceded to other Powers. The Chinese raised the issue of the Open Door between the United States and the Four Allies at a time when the latter were fighting for their existence in Europe and sat back to enjoy the spectacle of the American Government fighting over a doctrine they had never subscribed to. The Chinese then contracted a loan with the Continental and Commercial Bank of Chicago setting aside revenues for its security previously allocated for the service of a French loan. Again they watched with great satisfaction the diplomatic conflict between Washington and Paris which culminated in the disclosure of a secret agreement conceding to France a monopoly of railway construction in Kwangsi province and the recall of the French Minister to Peking.

Open Door and Radio

In the same way, the Chinese raised the issue of the Open Door between the United States and Japan over the Radio contracts. In this instance, the formal contract between the Chinese Minister of the Navy and the Mitsui Company of Japan, was duly signed by both parties as a purely business proposition involving no conflict with the Open Door principle. After its execution, the Chinese Government obligated itself in a supplementary and secret resolution to prohibit for thirty years the operation of any other wireless station in China. The resolution reads:

"During the period of thirty years mentioned in Article 4 of the contract, the government shall not permit any other person or firm to erect, nor shall it erect itself, any wireless station in China for the purpose of communicating with any foreign country."

This resolution would indicate that China did not consider herself bound by any limitations on her contractual independence.

High Chinese officials, declare that in allocating the radio revenues as security during the thirty year life of the Mitsui loan, their Government violated no previous agreements, secret or otherwise. They say that their blunder consisted in maintaining secret the supplementary guarantee. The Chinese Government of 1918, could not foresee that a future cabinet antagonistic to Japan, would enter into a radio agreement with a foreign company invalidating the Mitsui guarantee, but it invited this contingency by binding itself to secrecy.

When, in January, 1921, a Chinese Minister of Communications concluded a further agreement with the representative of the Federal Telegraph Company the resolution could no longer be maintained secret. In order to protect their interests, the Japanese were compelled to reveal its existence and in doing so, brought upon themselves the onus of having violated the Open Door doctrine.

Much water has passed under the bridges since 1921. At that time it looked as though Japan and the United States might be forced into hostilities over China. Conditions have changed. The campaign to incite hostilities in the Pacific failed. Japan and America are now linked together by intimate commercial and financial ties. Their Chinese policies are identical. Aside from the Exclusion Clause in our Immigration Law, there is nothing to mar the present cordial relations except this radio dispute. For the sake of everybody concerned it is time it was wiped off the slate. The American people are demanding increased communications with China. Our Government cannot be expected to remain satisfied with one slow-speed cable under the Pacific during a crisis in the Far East, when European capitals are served with three high-powered lines.

The Radio Corporation of America through its counsel, makes out a convincing case against Japan but refrains from arraigning the Chinese for their part in the transaction. This three cornered controversy cannot be settled in fairness to all parties, unless China voluntarily assumes responsibility for her mistakes. Here is the rub. No Chinese Government would dare assume such a responsibility and admit the right of foreign Powers to interfere in its sovereign affairs. This explains, in large part, why to date, the radio dispute remains unsettled.

The Inevitable Compromise

In his recent address, Mr. Manton Davis of the Radio Corporation, pointed the way to a business-like solution to the dispute and the Japanese concerned have also expressed from time to time a sincere desire to have this matter settled as soon as possible in order to eliminate all points of friction with the United States. Whatever is to be done along these lines should be done at once. We are rapidly approaching the end of a long period of misunderstandings arising out of foreign limitations upon China's independence in her contractual relations with foreign corporations. There is little reason to doubt that when the present "unequal treaties" are revised, China will insist upon complete independence of control over her interior and exterior communications.

In the present temper of all factions, nothing will satisfy them but a full and complete recognition of China's sovereignty in all matters. When the old treaties are revised, all limitations upon her freedom of action will disappear and no foreign government will be justified in invoking the Open Door principle. China will then be able to enter into development contracts and give whatever security she deems proper for the service of the loans. She can, if she wills, contract with a Latvian, Portuguese, or an Irish firm, for the construction of her entire railway system without fear of interference from other governments. She can grant or create monopolies and no foreign government may obstruct her right to borrow from any one country or group of countries.

The Open Door doctrine cannot be enforced in China's present frame of mind. It is a waste of time for friendly governments to indulge in further diplomatic squabbles over a principle China declines to adhere to and which, at all events, is destined to disappear as soon as new treaties are negotiated. In the face of the present situation in China, the interests of the United States and Japan would seem to be best advanced by coming to some mutual understanding concerning their respective radio contracts before the march of events invalidates both contracts.

With the Japanese, as well as the Chinese, how a thing is done is frequently more vital than what is done. Intentionally or otherwise, Japan may have violated the Open Door principle in accepting the secret resolution as a guarantee for the repayment of the Mitsui loan. If the Americans have a strong case, the Japanese have an equally strong and convincing argument. In the last analysis, the Chinese simply exercised their undoubted sovereign rights over an undertaking coming directly under the supervision of a government department. For the sake of cementing her relations with the United States on a solid basis, Japan would undoubtedly accept an invitation to a round-table conference to discuss and settle this one outstanding dispute, but she would never consent to attending any conference where she is to be arraigned before public opinion as violating the Open Door doctrine.

The Radio Corporation of America is entitled to carry out a contract entered into in good faith with the Chinese Government or be indemnified for all its out-of-pocket expenses and loss of prospective profits. If the execution of this contract invalidates a previous undertaking with Japan, also entered into in good faith with the recognized Chinese Government of the day, the Japanese have a just claim upon China for full compensation and damages for non-fulfillment of contract. Exercising their sovereign powers, the Chinese authorities entered into a contract with a Japanese company to create and operate a branch of its official activities which it holds as a government monopoly and gave as security the revenues to be derived from this monopoly. Three years later, they signed a further contract which invalidated the previous one, and, rather than come out fairly and squarely in defense of their undoubted sovereign rights in the matter and accept the penalty for breach of contract, they have waited for the American Government to deliver them from their predicament by invoking the Open Door Doctrine against Japan. In the meanwhile, radio stations are being erected in nearly every provincial centre in China. Only recently, a German company erected for the Southern Chinese Government a high-powered wireless station at Canton, communicating with Europe and all points in Asia and Malaysia. Now comes the Western Union Telegraph Company with its elaborate plans for a new high-speed cable under the Pacific supplemented by a radio service that still further impairs the value of the Radio Corporation's contract. By the time the Chinese Government is once more competent to fulfill its obligations, about all that will be left to the Radio Corporation of America will be a worthless contract.

and a claim for damages that stands little chance of being paid. Who is to blame? The Chinese Government who rejects the Open Door doctrine as applied to its official activities; the Japanese Government, which accepted a guarantee in violation of the Open Door understanding; or, the American Government for creating a principle which even the World Court cannot reconcile with China's sovereignty.

The following article from the *New York Times* by L. B. N. Gnaedinger summarizes the renewed interest in cable and radio communications in the Pacific:

New enterprises under consideration by America's two great telegraph and cable companies presage an era of competition unknown in the communications industry for several decades. The frenzy of the men who spun leagues of wire across the country in the years following the Civil War, and the rate-cutting campaigns waged by the Atlantic cable companies toward the close of the last century, will be recalled when the plans of these two rival companies mature. Then for the first time radio will compete with land telegraph within the United States, while in the Pacific there will be a rivalry in which not only American efficiency but also Oriental diplomacy will play a part.

The increased competition between the Postal Telegraph-Commercial Cable or Mackay companies and the Western Union Telegraph Company will be in point of service rather than in reduction of rates. It is many years now since the Atlantic cable companies and the land line systems in the United States abandoned the policy of rate-cutting that at one time was ruinous to the industry as a whole.

Telegraph and cable rates have become standard almost the world over. In America, privately owned companies compete vigorously in point of speed, accuracy and the thousand and one ways by which the American public is encouraged to maintain its record as a user of wire services. The Mackay companies propose to heighten this competition by becoming the world's first organization to operate both radio and wire systems.

Radio Extensions

In the United States, the Mackay companies want to establish a net-work of radio circuits that will serve as extensions or "feeders" to their present wire system. At present the Mackay companies operate chiefly between the larger cities of the country where the greatest volume of telegraphic traffic originates. It is left to the Western Union, through its contracts with the railroad companies and other facilities, to provide service for less important points. It would be an economic impossibility for the Postal Company to construct wire systems to these frequently remote points, and now it proposes to reach them with the radio. To this end it has bought patent rights and provided manufacturing facilities. It awaits only the approval of the Federal Radio Commission and other regulatory bodies to establish its proposed system.

In thus committing itself to the use of radio the Postal has employed the time-honored strategy of making an ally of a rival. Its policy is at variance with that of the Western Union, whose head, Newcomb Carlton, has been outspoken in delimiting the value of wireless in commercial transmission of messages. However, the Mackay companies will use the radio not to supplant but to supplement their wire and cable systems. They will retain the advantages of the older methods and enjoy the benefits that may accrue to radio operation. Not the least interesting of the results of this decision will be the entrance of the Mackay companies into competition with the Radio Corporation of America for transoceanic and ship-to-land business.

For many years the Commercial Pacific Cable Company, through which the Mackay interests operate, has owned the only telegraphic link under the Pacific between the United States and Asia. There is an "all-Red" or British Imperial cable linking Canada, Australia and New Zealand, but this has not competed with the Commercial Cable. In recent years the Radio Corporation of America has operated wireless service between America and Japan, but has not established a station in China.

Supplementing the Cable

The Commercial Cable and the Radio Corporation compete in providing service to the Hawaiian Islands, the Philippines and Japan, but the Commercial Cable Company has yet to feel in the

Pacific the effects of a rival cable system direct to the Far East and providing the regularity of service associated with a wire system. It is such a rival that the Western Union proposes to provide at a cost of from between \$10,000,000 and \$15,000,000.

As a counterstroke, the Commercial Cable Company proposes to build a chain of radio stations over the Pacific on the routes of its present cable clear to China. Other American interests may have had difficulty in making contact with troubled China, but the Commercial Cable officials are confident that their established rights in Shanghai will stand them in good stead when the time comes to build a radio station there.

The Mackay interests have never publicly attributed to the radio all the advantages its supporters claim for it in the field of commercial communication. They feel, however, that as an auxiliary to a cable system it will be of the greatest value. They will use their Pacific radio to lighten the burden of traffic on the cable at times when congestion is greatest and also as an alternate means of communication in case of alterations or repairs to the cable system. The radio will also prove valuable in transmitting the deferred or cheaper classes of traffic that otherwise might interfere with transmission of fast or full-rate messages.

By acquiring the Federal Telegraph Company of California the Mackay interests have gained control of three Pacific coast radio stations, which will be used as the basis of their Pacific radio. The Federal Telegraph provides ship-to-shore service on the Pacific and also point-to-point service, embracing Los Angeles, San Francisco, Oakland, San Diego, Portland and Seattle. It manufactures radio instruments operated by the arc method, and its ownership of certain patents provides what the Mackay interests assert is their sole legal means of entering the radio field in competition with the Radio Corporation of America. All the services provided by the Federal Telegraph Company the Mackay interests propose to improve and expand.

An Old Route Revived

In opposition to these elaborate plans for improving communication over and under the Pacific, the Western Union proposes in effect to revive a project that died a sudden death in 1866. In that year there terminated an almost forgotten attempt by the Western Union to provide communication between America and Europe—not by a direct Atlantic cable but by an "overland" route through Alaska, the Bering Straits and Siberia. Again history will repeat itself, for the route considered for the new Pacific cable for a great part of the way follows under water the deviations of the "overland" route.

Starting from Seattle, the proposed Western Union cable would run up the Pacific Coast to the Aleutian Islands off Alaska; thence to Hakodate in Japan, Shanghai in China and Manila in the Philippine Islands. It would follow a "great circle" route of 7,100 miles, considerably shorter than the route followed by the Commercial Pacific Cable.

In an extreme instance the Western Union might follow a route paralleling the Commercial Cable, but the Western Union is now negotiating landing rights with Oriental countries in the confident expectation that it will be able to fulfill its plans for the shortest cable link between America and the Far East.

This short route means not only a cost of \$10,000,000 as compared with \$15,000,000 for the longer route but also higher speed in transmission. The shorter the distance the higher the speed is an axiom of telegraphy. A permalloy cable with the relay points provided in the northern route would make possible a speed of about 2,500 letters a minute in each direction for the Western Union's cable. This would surpass many times the best efforts of present radio or cable companies in the Pacific.

Politics in the Orient

However, in all projects for improving communications in the Pacific there is the factor of Oriental politics. This may be resolved into the problem presented by many warring factions in China and the Japanese Government's apparent preference for radio as opposed to cable communications. The fact that Japanese telegraph systems are Government-owned and that the Japanese Government is not in a position to lay expensive cables is also to be considered in the situation.

Both the Western Union and the Mackay interests base their Pacific plans on increase in trade between America and the Orient. There is, however, another aspect in the situation. In the recent disorders in China Washington officials found their means of keeping contact with the situation inferior to those of London and other European centres. Three cable or telegraph companies, with several series of cables at their disposal, provided communication between Europe and China at that time. Direct communication between China and America was provided by a single cable. This situation would be greatly improved on completion of the proposed projects.

When Perry McD. Collins, American commercial agent to Russia, proposed in 1861 an overland telegraph system via the Bering Straits his plan seemed feasible. The Russian Government began building a line across Siberia on a route followed in large part to-day by the Great Northern Telegraph Company, a Danish company that provides an overland wire route between Europe and the Far East.

The Atlantic Rival

With the encouragement of Congress and Secretary of State Seward, the Western Union sent out an expedition from San Francisco to build a line to Russian America, as Alaska was then known, which would connect with the Siberian system. But while the Western Union rushed preparations for the project the Great Eastern, mammoth steamship of its day, lay in its dock swallowing coil after coil of an Atlantic cable destined to set the overland project at naught. The ships of the expedition to Russian America had hardly started before the Great Eastern had laid this cable and also put into operation another cable that had lain broken for a year on the bed of the Atlantic.

Out of touch of civilization, the Russian-American expedition pushed on. A line of 850 miles long was laid between New Westminster, B.C. and the Skeena River, which the expedition discovered, and another about twenty miles long in Alaska before the engineers received orders to abandon the work and return home.

British Trade and Industry

By Gilbert C. Layton, Assistant Editor of "The Economist"

(SPECIAL TO THE "FAR EASTERN REVIEW")

The Iron and Steel Position

IN recent months we have had to paint the picture of Britain's iron and coal industries in somewhat sombre colours. It is, therefore, refreshing to find that a number of company reports issued during the past few days justify the use, in modest measure, of rather brighter tints. The reports of the Sheepbridge Coal and Iron Company and the Staveley Coal and Iron Company deserve special mention. For the year ended June 30th, 1927, the former returns net profits at £116,418, against £69,403 for the previous twelve months, while the latter's profit increase is from £158,588 to £244,978. But one swallow does not make a summer, and it would be fallacious to argue from the particular to the general. These companies undoubtedly owe their prosperity to exceptional circumstances, not the least important being, in one case, important interests in the South Yorkshire Coalfield. Moreover, the directors themselves, in the reports, admit that conditions to-day are decidedly adverse to the companies.

In the iron and steel industry the outlook is still uncertain. A month ago we referred to the reduction in the price of Cleveland iron and to the launching of the scheme of rebates to buyers of British steel products. It is doubtful, however, whether these moves have met with the success anticipated. There has been improved buying of Cleveland products, but consumers appear to be somewhat dubious regarding the attractions of the rebates scheme. The August production figures of iron and steel again showed a decline—due in part to the incidence of the holidays—but the output was the largest during any recent August. Though the number of furnaces in blast was lower, the declining tendency is expected to be checked during this month. The export trade, though still unsatisfactory, shows the industry's increasing strength from the world competitive standpoint. On the whole, while the looked-for autumnal buying movement has not developed, it is believed that consumers are not expecting further considerable price reductions. The position thus suggests the possibility of a considerable buying movement in the coming weeks.

The Coal Outlook

If the outlook for the iron and steel trades is not so definitely reassuring as could be desired, that for the coal industry is even less so. Output and the number of men employed remain at a comparatively low level. Production has been well below 5,000,000 tons per week since July, while the number of men employed has been under 1,000,000 since the middle of the same month. But even this output is undoubtedly in excess of immediate requirements. Indeed, the world as a whole is suffering from over-production of coal. A leading authority has put the world's actual surplus in 1927 at 15 per cent. and the possible surplus for the whole year at over 20 per cent. But in addition to the over-production special

factors are operative which disturb the normal outlets for British coal. In France, Germany and Spain restrictive measures have been recently adopted with a view to the compulsory consumption of native coal, while reparation deliveries are an unsettling influence.

In these circumstances, it is not remarkable that the British coal export trade is unsatisfactory. The figures to date are only slightly in excess of those for the corresponding period of 1925, while they are appreciably below those for 1911. Moreover, much of the coal that has been exported has been sold at a loss. In the South Wales coalfield, for instance, the pit-head loss per ton was over one shilling. Nor are there any appreciable signs of a general advance in prices. Salesmen are still being called upon to make price concessions, but it is clear that the colliery owners cannot make considerable further reduction. Meanwhile, demand is disappointing and the expected revival has so far failed to materialise. But some increase in consumption is bound to occur sooner or later.

The British Wireless Industry

At the time of writing the National Radio Exhibition is being held, this being the sixth wireless exhibition that has been organised in England. In recent years broadcasting has made enormous strides in this country. At the end of 1923 there were 250,000 people, out of a population of 44,000,000, with receiving sets. To-day 2,500,000 people listen-in. Very nearly one household in three in England has a receiving set, this ratio comparing with one in seven in America. Doubtless Lord Birkenhead accurately described the situation when he said that the transmitting agency was of remarkable efficiency, but the receiving elements were of varying efficiency. But the Exhibition now in progress suggests that steps are being taken to perfect the receiving elements. Moreover, it is clear that the organisers are aiming at simpler and cheaper wireless.

Many of the valve sets that are shown are both cheap and simple and by using these the most inexpert should have no difficulty in obtaining a wide choice of foreign stations, the new sets of only two valves obviously having most of the advantages of the old five or six valve sets. Among the apparatus shown this year, the examples that are likely to have a wide appeal are the new varieties of loud speakers, which show a distinct advance on their predecessors of only a year ago. A number of ingenious devices are shown, among these being one which, called the automatic program selector enables the listener to select in advance the items he wishes to hear from the published program. Many manufacturers are particularly studying the home constructor, and at many stalls there are up to date accessories of all descriptions at a low price. The extent of the development of the wireless industry in this country is partly reflected in the fact that there are nearly 300 stands in the present exhibition, as compared with only 50 when the first exhibition was held.

The Nordic Snob

Senator Bingham's Misplaced Enthusiasms: Clubs Normally Determine Their Own Membership: The Bank Story Cannot be True

By George Bronson Rea

FROM the report of Senator Bingham's dinner speech at Honolulu quoted in "The New York Evening Post" of September 28, in which he ascribes the present unrest in Asia to Nordic snobbery, it is evident that he has given but a cursory examination into the reasons for many of the conditions he rails against.

Senator Bingham tells us that he refused to accept an invitation to the Army and Navy Club at Manila because he was informed that no Filipinos are permitted to enter its "sacred portals." Unconsciously, perhaps, he reopens one of the most delicate and embarrassing problems that confront the white man in his social contact with the Asiatic. The British in India, Americans in the Philippines and the foreigner in China have all endeavored in some way or other to enter into intimate social relations with the educated people of the countries in which they reside. The British were the first to tackle the problem by founding an Anglo-Indian Club in Calcutta, but the outlook of the Hindu on mixed social relations is such that intimacy can not be encouraged.

As far back as 1904, the writer strongly urged Americans in the Philippines to follow the lead of the British in India and provide a meeting place where the leaders of thought of both races might exchange views and establish cordial relations. Governor General Forbes acted on this idea and founded such a club. There are real gentlemen in all Asiatic countries, but it is extremely difficult to let down the bars for membership in a European club, for once the precedent is established, tremendous pressure would be exerted to admit others, who, despite their elevated official or business standing, can never grasp the Occidental conception of social equality. A club is, after all, such a private matter that anywhere in the world the determination of qualifications for membership is always arbitrary.

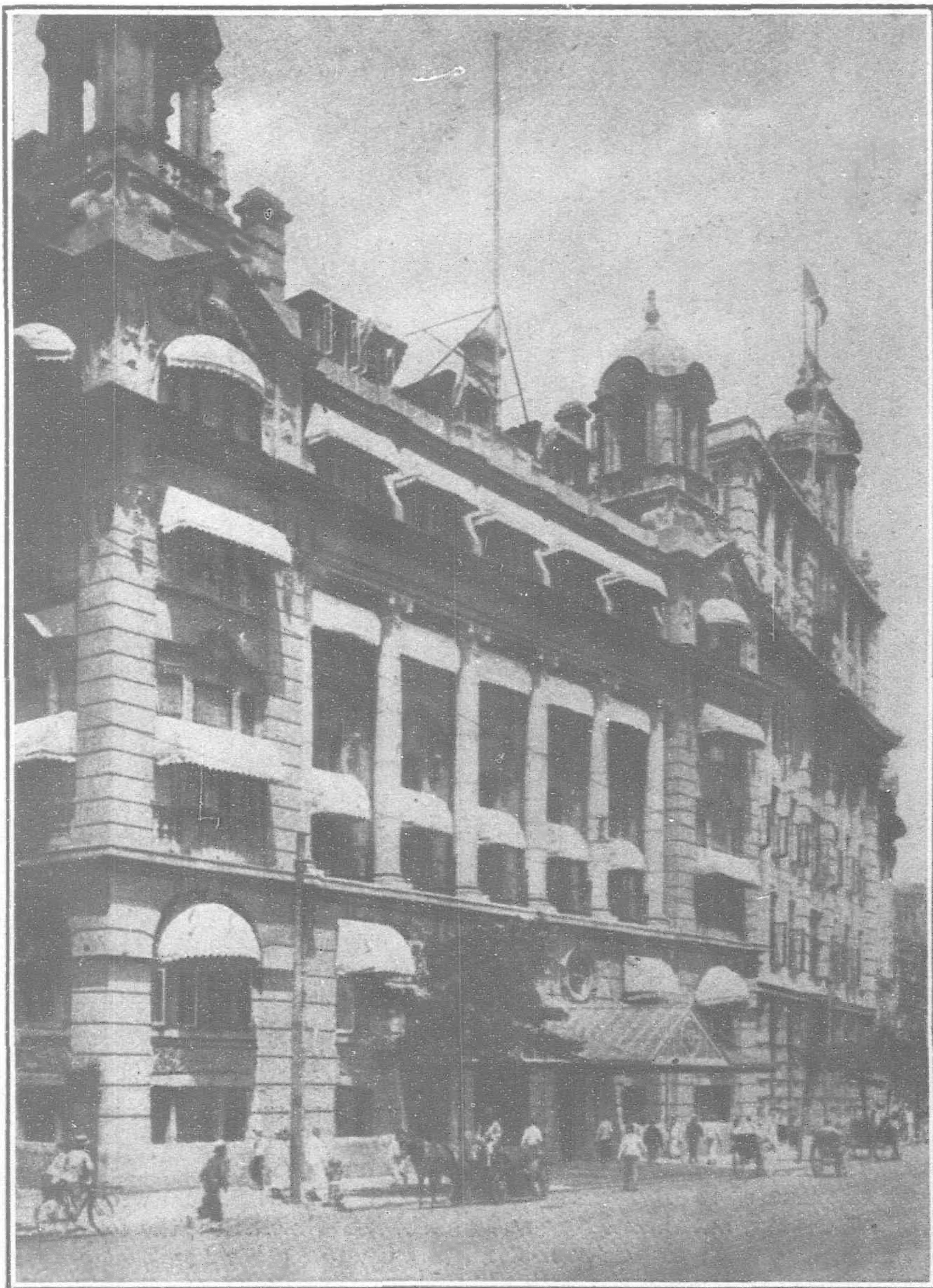
The Army and Navy Club of Manila is the centre of American social activities in that city, the rendezvous of the wives and daughters of the American official element. Once the Filipino, no matter how high his station, is admitted to membership, it would be difficult to keep out others who by reason of their political influence would demand entrance as a matter of right. The same rule, though inspired from different motives, excludes Asiatics from membership in the white men's clubs in other parts of the Far East. The Germans broke the rule

before the war by subsidizing a Sino-German Club in Peking where they could fraternize on terms of equality with Chinese officials. After the war, foreign businessmen in Shanghai established the Union Club and invited the leading Chinese merchants and officials to join. As for Americans they have demonstrated a willingness to meet and mingle with the educated Chinese on a plane of full social equality. In the Rotary Club there are many Chinese members. A large percentage of the membership of the American University Club is Chinese, in fact, a Chinese is, or has been its president. There is also considerable mingling of Chinese and foreign society in Shanghai, Tientsin and Peking amongst the more advanced and educated element of both races.

The line, however, must be drawn the same as in the exclusive clubs of other countries. The fact that a Filipino is not eligible to membership in the Army and Navy Club in Manila or a Chinese cannot enter the Hongkong, Shanghai, American, Tientsin or Peking clubs, is no more an assumption of Nordic superiority over the Asiatic than the rigid rules concerning membership prevailing in any of our select clubs at home. It is only in Japan that the

mingling of Asiatics and foreigners has proved an unqualified success. The exclusive Tokyo Club whose membership includes some of the proudest and most aristocratic names in Japan is probably the only organization of its kind in Asia that has successfully solved the problem involved in the free mingling of foreign and Asiatic society on an equal footing. Every Japanese member of the club is a gentleman, measured by the most rigid code of Western standards. But, foreigners have their own exclusive clubs in Japan and the Japanese do not consider it as an assumption of social superiority; they are not obsessed with an inferiority complex in these matters. Japanese and Chinese have their exclusive clubs to which foreigners cannot be admitted.

Senator Bingham digs up the hoary old story about the parks of Shanghai—parks on Chinese soil in a city where Chinese pay 60 per cent. of the taxes—and in these parks there are signs reading; "No Chinamen or Dogs Allowed." These signs do not appear in the Parks of Shanghai. But Senator Bingham and others who enjoy raking up this old municipal ordinance overlook altogether the dire necessity for its enforcement. When the Shanghai concessions were set aside



The Shanghai Club

for foreign residence, the land was a quagmire, unfit for human habitation. The Chinese Government hoped that the "foreign devils" would find it so unhealthy that they would depart and leave China in peace. The foreigners took that mudflat and reclaimed it. They built embankments to keep the river from overflowing, they dug canals, drained the land and filled in the low ground. Little by little they developed a narrow strip fit for foreigners to live on. They laid out a park by the river-side as a breathing place for their women and children and to conserve this spot for their special enjoyment, they prohibited the promiscuous entrance of Chinese.

Here again, the foreigner in China is confronted with a delicate problem, for although he would gladly admit Chinese gentlemen and their families to these recreation grounds, it is difficult to draw the line. Once the right of free admission of Chinese to the public parks of Shanghai is conceded, the rabble of coolies, beggars and lepers would soon convert these breathing spots into centers of contagion. Every decent foreigner in Shanghai has for years been seeking a practical solution to this problem. The difficulty is that almost any plan suggested which will make possible the admission of Chinese and yet conserve the parks seems to prove even more offensive than the present condition. It is true that Chinese pay 60 per cent. of the taxes which maintain these parks, but in return they enjoy the right of residence in a settlement ceded to foreigners for their exclusive use, whose authorities guarantee law, order and security for their lives and properties, a boon they cannot obtain anywhere in their own country outside the foreign settlements.

It may be all wrong from the Chinese viewpoint. But I venture to state that if the parks and public playgrounds of any city or town in the United States were suddenly overrun by a mass of humanity knowing nothing and caring less about personal hygiene, amongst whom plague, small-pox, cholera and other contagious diseases are always present, laws would soon be enacted which would put a stop to this intolerable menace to the public health. The population of a Chinese city is so mixed that constant vigilance is the price of life for the white man in Asia. Once the barriers he has erected to safeguard the health of the community are broken down and control handed over to the Chinese, Shanghai will become one of the plague spots of Asia. Senator Bingham may have forgotten that the United States went to war with Spain, because, amongst other things, the intolerable sanitary conditions in Cuba were a constant menace to the health of our Southern states. The ports of China are only two days from Japan and two weeks from our Pacific coast. Only the most rigid quarantine measures preserve Japan against being decimated by plague and cholera imported from China. Some day when the concessions are restored to China, Americans will understand better just why the Shanghai Municipal Council closed the public parks of the Settlement to the free entrance of the Chinese. Educated Chinese must realize this for their private parks are also closed to the masses.

It Cannot Be True

Senator Bingham tells the story about a Chinese gentleman, a graduate of Yale, whose wife is a graduate of an American girl's school and whose two sons are also Yale graduates, who was insulted in his presence by the paying-teller of the International Banking Corporation, now the National City Bank of New York.

A Chinese graduate of Yale with two sons graduates of the same university should not be hard to identify. He would be a man of some age and prominence in the community. He would also be possessed of considerable means. With his intimate knowledge of American ways, it is difficult to believe that he would so meekly withdraw after the insult. He would simply have stepped over to the window of the assistant manager of the bank and made a complaint and the paying-teller would have been fired on the spot. Or, Senator Bingham himself would have stepped into the manager's office and demanded an apology for his friend. There was no need for two men of such prominence to take such an insult lying down. The International Banking Corporation does not do business that way. In twenty-five years experience with this representative American financial institution, I have never heard of such an act of discourtesy and my Chinese shroffs and cashiers have had the exclusive handling of my accounts with the bank. Senator Bingham vouches for the truth of the story. He accompanied his Chinese friend to the bank and retired without uttering a word of protest. He now tells the story in order to discredit the only American banking institution in that part of the world. One would think that as representative of the American people, he would have demanded immediate satisfaction for an insult which lowers our national prestige at a time when the Chinese radicals are seeking any and every argument to support their anti-foreign propaganda.

Senator Bingham seems to think that white business men go to the Orient solely for the purpose of enriching themselves by any means available. As a matter of fact, the great majority of foreign business men represent the manufacturers of their respective countries, compelled to take this means of conducting their business with China because there are few responsible native concerns competent to handle import and export trade. Few Americans, or Britons, for that matter, select China as a place of residence from choice. They would much prefer to conduct their business with China through reputable Chinese firms but the time has not yet come. If American trade with China is to hold its own, it must be conducted through American firms having offices in China, or, we must hand our interests over to the Japanese or British. We cannot, as yet, trade direct with the Chinese.

If we should strike a balance sheet of the profits derived from American trade with China and the millions we have poured into that country for charitable purposes, it would prove conclusively that Americans are not in China to enrich themselves by any means available. If we add together the costs of missions, colleges, schools, hospitals, Y.M.C.A.'s Rockefeller Institute, Flood and Famine Relief and other Red Cross contributions, remission of the Boxer indemnity, broken contracts on the part of Chinese merchants, repudiation and failure to pay interest on legitimate loans and sales of materials, the cost of maintaining legation and railway guards and the Yangtze Patrol, the huge annual losses on exchange arising from an unstable and chaotic currency and other business hazards and illegal taxation on our merchandise, the total over a period of two decades will exceed \$500,000,000. In the same period the profits on our exports to China would not exceed \$100,000,000, if that. In plain words, China is and has been a drain on our national resources which will take a decade or two of stable trading conditions to make good. Far from exploiting the Chinese, they have taken all and given little in return.

Shirt Tails, Skirt Tails and Eye-Sight

MANY years ago it was a maxim of the Manchester trade that if the Chinese would only add another inch to the tail of his shirt, the looms in England could not supply the increased demand for cotton goods. The extra length of the Chinese garment spelled prosperity for Lancashire.

Mr. K. Uchiyama, acting Japanese Consul-General in New York recently went Manchester one better. He asked his Rotarian audience to influence its wives and daughters to revert to a more Victorian conception of modesty in dress and lengthen their skirts a few inches or at least use a heavier grade of silk. Not that he was conservative, or unappreciative of beauty, but that this reform in the current feminine styles would meet with the enthusiastic approval of his country-men, whose national prosperity was founded on raw silk and silk textiles.

Now comes the woollen manufacturers with a similar plaint. They, however, are taking the bull by the horns by going to headquarters at Paris with their fight. At the International Woollen Congress held recently at Leipzig, the American delegate introduced and succeeded in passing a unanimous resolution for the appointment of a committee to visit the fashion creators of the Rue de la Paix and bring pressure to bear upon them to return to long dresses for women. The present styles, they assert, has had a most disastrous effect on the woollen goods trade and something must be done to restore prosperity. Between shirt tails in Asia and skirt tails in Europe and America, the textile industry is up against it.

On the other hand, oculists affirm that eye-strain amongst the masculine sex is one of the most alarming symptoms of the times and ascribe the cause to moving pictures.

Regional Recognition in China

By George E. Sokolsky

AMONG the many proposals for a revision of American policy in China is one, sponsored by Senator Hiram Bingham of Connecticut, for recognition or at any rate, direct friendly contact with the numerous Governments, which from time to time, set themselves up in various parts of China. Broadly, there are two Governments in China, the recognized Government in Peking and the Nationalist Government in Nanking. Actually, neither of these governments exercises a very wide or definite control beyond one or two provinces. This lack of control from a central organ is no new condition to China: there has been a progressive lessening in authority since the Taiping Rebellion which began long before the foreigners had made their very potent impress upon China. At the beginning of November, there were ten Governmental groups in China, more or less independent as circumstances permitted. Through a series of battles and political maneuvers, this number has been reduced. At the moment of writing a political map of China would show the following:

1. **PEKING GOVERNMENT:**

Manchuria, Chihli, Shantung, parts of Honan, Mongolia, Kiangsu and Anhui, and a railroad corridor to Shansi. This Government controls the Tientsin-Pukow, Peking-Mukden, Peking-Suiyuan and part of the Kinhan Railways.

2. **NANKING GOVERNMENT:**

Part of Kiangsu, Chekiang, Kiangsi, Fukien, Kwangtung, Kwangsi, Hupeh, Hunan, part of Kiangsu and Anhui. It controls the Shanghai-Nanking, Shanghai-Hangchow and part of the Tientsin-Pukow line.

Its greatest physical importance, however, arises from its control of the Yangtze and West Rivers. It also possesses the cities of Canton, Shanghai and Hankow, three of the four principal trading cities of China.

3. **YEN SHIH-SHAN:**

This general is now fighting the Peking Government for the possession of the province of Shansi, which he has held for 16 years. He is now in alliance with the Nanking Government but it is expected that he will shortly go over to the Peking Government.

4. **FENG YU-HSIANG:**

This general holds part of Honan, Shensi and Kansu — the north-

western provinces. He is in alliance with Nanking but is, in fact, independent. He is also in alliance (at present somewhat indefinite), with Soviet Russia.

5. **SZECHUAN:** This province is an enormous state within itself on the upper reaches of the Yangtze. It has for years been independent of any political control by any outside group. The generals within it partition the province among themselves and often conduct wars entirely on their own. These wars affect political conditions in Hunan, Hupeh and Yunnan.

6. **YUNNAN:** This province empties into French Indo-China and is economically dominated by a French railway which provides it with the only outlet to the rest of the world. The population is partly Chinese and partly aboriginal. To a very large extent, Yunnan dominates the poorer province of Kweichow.

7. **SOVIET REPUBLIC OF MONGOLIA:** This vast region is now

practically under the control of Soviet Russia. It is completely independent of any group in China.

8. **THE MOHAMMEDAN CHIEF OF CHINESE TURKESTAN:** Nominally subject to the Peking Government, actually, these chiefs are completely independent of any control from any Government in China.

9. **TIBET:** Politically, entirely independent of China.

Even the above summary does not quite complete the picture. China is now in the midst of as far-reaching and conclusive a revolution as any country has yet witnessed. During such a period, all forms of central control lessen. Even where one of these governments is indicated as controlling an area, it is uncertain whether such control can always be exercised. Localisms intervene. Officials who have developed personal strength in a region cannot easily be disciplined for fractures of administration. Military commanders on the spot act without consulting the central authority to which they admit allegiance and they cannot be reprimanded without risk of a rearrangement of partizanship. These confused conditions are normal in revolutionary periods and their exaggeration in China is only due to the size of the country, the hugeness of the population and the inadequate means of communication.

Foreign Powers, in their dealings with China, are
(Continued on page 485.)



Sen. Hiram Bingham

Trade Tendencies in China

Features of Present Position

By E. M. Gull, Secretary of the China Association

WHILE the details of the present commercial position in China are obscure, partly owing to the absence of statistics, but more because of the kaleidoscopic nature of Chinese politics, leading features are tolerably clear and in certain respects encouraging. The encouragement is to be found in the proof of resiliency furnished by the trade of Hongkong and, to a lesser extent, by the figures of British exports of steel (other than sheet bars and tinplate bars) and textile machinery. Exports from the United Kingdom and Northern Ireland to Hongkong for the first six months of this year are about 30 per cent. better than they were during the corresponding period of 1926, while the increase in the combined values of the items mentioned, calculated over the same period, is represented by about 28 per cent.

In view of the distinctly depressing information which must presently follow, the encouragement to be derived from these features has the somewhat negative character of comfort. In certain situations, however, the presence of comforting factors means more than mere compensation; it means a hopeful outlook. The Hongkong figures show that, in spite of all the Colony has suffered, its commercial vitality remains unimpaired. Boycott and taxation have not succeeded in sapping it. Both are still embarrassing, but to a much less extent and in changed circumstances. If pickets at Canton are again interfering with British shipping and goods they are no longer the agents of a vast anti-British conspiracy. Eighteen months or so ago they had the Kuomintang behind them and men of the type of Eugene Chen. To-day Chen is a refugee in Moscow and the Kuomintang is disintegrating.

Position on the Yangtze

This big change in the political situation is too recent for figures to show whether Chinese trade as a whole has begun to react to it. For the first six months of the year Customs returns show a decided drop. But just as Hongkong's recovery began with the transference of the Kuomintang from South to Central China, so, other things being equal, Shanghai may be expected to benefit as the Nationalist grip on the Yangtze weakens. Other things, unfortunately, are not yet equal. Trade on the Yangtze is to a large extent paralysed by financial chaos. There is an embargo on silver, and Hankow is flooded with notes that nobody wants.

Writing to his London office from Hankow on August 20 a correspondent says:—"It is difficult to purchase cargo even with payment in Shanghai taels, simply because the dealers do not know in what practical form to change them in order to pay the countryman, who is naturally becoming shyer and shyer of accepting local bank notes. Silver will probably become the only medium, but there is an embargo on silver from Shanghai to Hankow and Kiukiang, apart from our own embargo here, so that business at any moment may be brought to a complete standstill."

The British banks have not yet found it possible to reopen and communication is difficult. Between Shanghai and Hankow shipping facilities are restricted; above Hankow they were until a few days ago to a large extent non-existent. The agreement made with the Nationalists for the government of the British Concession is working badly and conditions of residence there are difficult and trying. The premises of at least one large British firm are still occupied by Chinese troops—or were on August 20—and the psychology of the area is a compound of mistrust and foreboding.

Lost Ground

Shanghai, of course, does not depend entirely on the Yangtze. It does a large trade with Tientsin, where conditions are more or less normal, and with other northern ports. But until the Yangtze recovers Shanghai's recovery can be only partial. Yet figures for the first six months of the year show that, so far as the United Kingdom's trade is concerned, partial recovery will not make up for lost ground. Our total exports to China (as distinct from Hong-

kong), nearly half of which go to Shanghai, are over 43 per cent. less than they were during the first six months of 1926. Details, for which I am indebted to the Department of Overseas Trade, are as follow:—

EXPORTS TO CHINA.

Total value of exports (United Kingdom produce and manufactures) from the United Kingdom to:—	Jan. 1 to June 30 1926	June 30 1927.
China (exclusive of Hongkong, Macao and leased territories)	£ 9,259,253	£ 5,194,749
Hongkong	1,530,185	2,057,298
Total exports	10,789,438	7,252,047
Cotton piece goods	4,112,721	2,319,909
Cotton flags, handkerchiefs, and shawls, not in the piece	98,358	42,088
Woollen tissues	1,270,699	676,196
Worsted tissues	381,487	169,893
Cotton yarns	73,645	95,899
Textile machinery	116,893	154,064
Iron and steel, old and scrap fit only for remanufacture (including old rails)	45,189	22,809
Steel, other than sheet bars and tinplate bars	30,874	36,322
Iron and steel, sheets and plates, coated:—		
Galvanized sheets (flat and corrugated)	97,453	50,984
Tinned and terne plates and sheets, including tinned plates and sheets, decorated, etc.	331,504	112,704
Lead	7,866	2,342

With the exception of the items already alluded to, these figures are decidedly depressing, more especially those of the cotton piece goods trade. For the latter indicate more than a phase; they continue a tendency which successive trade returns have made increasingly obvious. In this tendency the most disconcerting feature is the growth of Japanese trade, which is now making inroads into what was formerly regarded as Lancashire's special and secure field—that of high-class goods. Figures for the past year are not yet available, but the fact is sufficiently well established to be independent of the latest statistics, and to be classed separately from an accompanying tendency, the growth of China's textile industry.

This, at its present stage of development, threatens our rival's trade more than our own. Japan's cheaper cloths drove ours from the market, and it is in competition with them that Chinese mills are, for the most part, working. These, including the mills that are foreign owned—49 in number, of which four are British—total 117, with 3,588,583 spindles and 24,057 looms. An increasing amount of their output is being exported abroad.

Demand for Machinery

The expansion of China's export of factory products of all kinds is worth noting. In 1926 it was valued at Tls. 26,656,000 as against Tls. 3,724,000 in 1921, the list now comprising building materials, i.e., cement and window glass; candles, electric lamps, electrical materials and fittings; match-making materials and matches, soap, photographic and printing materials, i.e., type. This development is, of course, part of the country's industrial growth, in connection with which the Statistical Secretary of the Chinese Customs in his latest report says:—"The need for modern machinery and the wish to acquire it are ever present in China. At the least lull in the political crisis inquiries come forth."

A special feature of last year's trade was the interest shown in Diesel engines, a "form of power," the report continued, "that is becoming increasingly popular in China because of its reliability

and its enormous economy as compared with steam-engines." Demand for this engine derives part of its strength from the multiplication of electric light plants. The total value of electrical materials and accessories imported into China in 1926 was 8.9 million taels, compared with 6.9 million taels in the previous year, Great Britain's proportion of the trade last year being roughly 18 per cent., and Japan's about 38 per cent. Most of the electric conduit was bought from us; bells, switches, etc., from Germany and Japan; fans, fittings, dry cells, flash-lights, etc., from the United States, whose proportion of the whole trade was about 17 per cent.

To characterize these various tendencies collectively is difficult, for if from the Chinese standpoint they are, on the whole, good, some of them from our point of view are disturbing. There can be no doubt that we no longer hold in China the position we once held, and it is unfortunate that politically we should appear so ready to yield ground. *Reculer pour mieux sauter* is apt to be dangerous where competition is keen.

Regional Recognition in China

(Continued from page 483).

constantly confronted with the fact that the only Government with which they can have any relations under the treaties, the Peking Government, can only exercise authority in one part of the country. The rest of China will not acknowledge Peking's fiat. Similarly, were the Powers to cease recognizing Peking and were they to determine to associate with Nanking, for example, they would find, in the present state of political conditions in China, that the limitations upon Nanking's authority are even more hazardous than those which obstruct the relations between Peking and the Powers.

Japan has long since envisaged this problem in all its realism. Japan has direct friendly contacts in China not only with any Government that might want to have relations with it, but with any principal official who may be in actual control of territory. The Japanese Consul-General in Shanghai, for instance, has been elevated to the rank of a Minister and he can act independently of the Japanese Minister in Peking. In Manchuria, through the Kwangtung leased territory and the South Manchuria Railway such a possibility of regional friendly contact has long been feasible. France has, particularly in Yunnan and Shanghai, followed a similar policy. The British Christmas Day Note and Sir Austin Chamberlain's famous speech on China, both presaged such a reorientation of British policy. The Russians, of course, attempted it but were badly scared by the complication of Third International activities in conjunction with the Kuomintang and the Communist Party of China.

Even the United States has been forced by events to meet with these regional Governments through its consuls and the Chinese Commissioners of Foreign Affairs. Little more than that is required at the present time. The appointment of High Commissioners, attached to each of the Governments, each with a different policy, would lead only to confusion and would in the end prove as objectionable to China as to the United States. On the other hand, there could be no objection to a Commission, official or unofficial, visiting China to determine the status of Americans in China, on condition that such a Commission should not limit its activities to a mere visit to Peking, Shanghai and Canton. For Americans and American interests now appear everywhere in China.

There can be no question but that Senator Bingham has hit upon an important idea—the United States should find a medium for dealing with the regional governments in China. At this time, there is no hope for immediate unity in China. The problem, then, is to maintain such relations between all parts of China and the United States as will make it possible for Americans to live and do business in China. That is the immediate problem of the moment—not the revision of the unequal treaties. So far as the Kuomintang is concerned, it is now known that their object is not to attempt the revision of treaties until their present military campaigns are completed. As for the North, upon them falls the

responsibility of establishing a united country. Why should the United States not attempt to be on good terms, let us say, with Szechuan even if that vast country is not on speaking terms with either Nanking or Peking?

Seattle's Leading Position

LEADING the American nation as a silk port, Seattle continues to hold its position, principally because it is on the quickest route between producer and consumer. Figures just released for the first five months of the year show that Seattle imported more than twice as much raw silk as did San Francisco, and three times as much as New York. In 1926, 17,662 tons of raw silk, valued at approximately \$200,000,000, were moved over Seattle docks and sent by fast train to the mills centered in New Jersey.

It was only a few years ago that much of this silk business was bottled up by San Francisco and Vancouver steamship lines. However, Seattle's proximity to the Orient, making possible a fast service of ten days from Seattle to Yokohama, and thus cutting down the interest and insurance rates on cargoes worth millions, was a feature silk shippers began to look upon with favor, and when the President boats, with 535-foot ships of the American Merchant Marine, were put on the route, Seattle jumped into the lead as the greatest silk importing city in the world.

Rivalry among various lines for the fastest delivery of shipments has been keen. The American Oriental Line claims the record for shipments from Yokohama to Seattle, the steamer President Jackson having crossed the Pacific in nine days and fifty minutes, with a shipment valued at ten million gold dollars. Two hours after its arrival at Seattle the first trainload was speeding across the continent; three hours later the second train, carrying its cargo, was en route, and five hours later the last consignment left. The fastest time made in rail transportation between Seattle and New York was three days, ten hours and ten minutes.

In order to facilitate the shipments coming to Seattle railroad men meet the big liners at Victoria on their arrival. They check all shipments and have their papers ready so that unloading begins the moment the ship arrives at the pier. Airplane mail is taken from the ship on its arrival in Canadian waters, and all silk documents are dispatched to Seattle, arriving four hours in advance of the liner, so that there is no delay in unloading the cargo from the big steamer into the waiting cars.

The saving of a few days, or even of a few hours, in the time required for transportation is a matter of considerable importance. For example, let us figure on a shipment valued at \$10,000,000. The interest at 6 per cent. for one hour only would be \$69.44 and for each day saved or lost \$1,666.67.

The Japanese trans-Pacific liners of the N. Y. K. and the O. S. K. rarely arrive with less than several million dollars worth of silk, and even the outright cargo steamers bring silk by the northern route to Seattle in preference to the longer southern route.

More than one billion dollars worth of silk products will be manufactured in the United States this year, and all but 21 of the 1,369 establishments manufacturing silk in the United States are in New England, which also distributes 96 per cent. of the silk products.

OLD COPIES

The New York Public Library desires old copies of the *Far Eastern Review* which we are unable to provide. Will anyone who can supply the following copies write to us or directly to Dr. E. H. Anderson, Director of the New York Public Library.

Vol I—No. 5, 6, 7, 8.

Vol II—No. 2, 4, 5.

Discovering Admiral Bristol

NO American Admiral, who ever came to China, was preceded by so much publicity and so many conjectures, as Admiral Mark Bristol, Commander of the U. S. Asiatic fleet. Admiral Bristol's record in Turkey, the fact that he enjoys the unusual distinction of having served in the dual capacity of a naval and diplomatic representative and the absence from China of Mr. MacMurray, the American Minister to Peking, naturally caused a flutter among those who read into Admiral Bristol's personality a probable Moses to lead all the confused out of this stormbound land of Sinim. Among the many suggestions for solving China's international problems was one proposing that the American Government should withdraw its diplomatic representative from Peking and should appoint in his stead, numerous high commissioners to represent it among the various governments now existing on the continent which still goes by the name of the Republic of China. Had not President Coolidge such a plan in mind when he selected as Commander-in-Chief of the U. S. Asiatic Fleet, the former High Commissioner to Turkey?

It is perhaps most unfortunate that neither the American Government nor Admiral Bristol publicly dispelled these suspicions. Privately, of course, they were solemnly and emphatically denied. But the public impression continued — particularly after Chinese and foreigners came to meet Admiral Bristol and found that he not only possessed a penchant for politics but that he keenly analyzed and understood the political problems which faced the Chinese people. His broad sympathies for the weaker peoples of the world, his keen interest in their struggle for independence and equality, naturally led those who had been conducting an endless propaganda in America, to believe that he would orient American policy to favor, not so much nationalism in China, which everyone supports openly or tacitly, but the Nationalist Government, which is a different thing.

Admiral Bristol, in his numerous speeches at receptions given in his honor, seldom spoke of China or the Chinese but seemed to dwell upon his experiences in

Turkey, from which he hoped analogies might be drawn. It was, of course, interesting to learn something about Turkey, first hand from Admiral Bristol, but his analogies were, from the start, not as impressive as perhaps he had hoped that they might be, for he was comparing a fly with an elephant, a country which can be included in a province of China, with the whole of China. He was comparing a nation which had for centuries, been in economic and cultural contact with Europe and whose territory had not so long been part of Europe, with a land which was only now feeling the full force of the impact of European civilization. China is reputed to have a population of 450,000,000, while Turkey can only boast of a population of 13,357,000 people. The province within China proper which has the smallest population, Kansu, boasts 6,000,000, people, while such a province as Kwangtung, which includes the city of Canton, has a population of 37,150,000.

The area of China is 4,278,352 square miles, while that of Turkey is only 494,538 square miles. It is interesting to note in this connection that the area of the province of Szechuan alone is 218,533 square miles with a population of 49,800,000.

Populations and areas, so disproportionate in themselves, make analogies impossible but they mean much more when one realizes that the boundaries of China meet sub-Arctic Siberia in the North, while in the South, they approach the Asiatic tropics. From the foothills of the Tibetan Alps to the Yellow Sea—such an area, inhabited for centuries by numerous races, is bound to be such an ethnological conglomeration as can be witnessed nowhere else on earth. And it is a complex of differing temperaments, traditions, habits and viewpoints. Such an area is not to be held in comparison with the very much simplified post-war Turkey.

But to complicate the immensity of China's problems, there is the astonishing insufficiency of means of communication. Whereas in Turkey, there are 2,068 miles for a country almost a tenth the size of China, in China there are approximately 7,500 miles stretching principally in several directions from Peking as a



Admiral Mark Bristol, Commander-in-Chief of the U. S. Asiatic Fleet.

Harris & Ewing

centre. There is not a single trunk line South of the Yangtze, the region of the thickest population and the principal political interest.

Admiral Bristol's analogy, then, had the effect of creating considerable wonderment with regard to his views on China. It was at first thought that carrying his analogies to their logical absurdity, he might be seeking for a strong man, a Kemal Pasha, and one sighed in sorrow, for have we, in China, not suffered much from this searching for strong men? Have the Powers not made all their mistakes in their effort to discover such a herculean figure in Yuan Shih-kai, Tuan Chi-jui, Chang Tso-lin and other militarists. But even casual conversations with Admiral Bristol showed that he had no such notions. In fact, it was this breaking down of analogies that led one to reevaluate his estimates of Admiral Bristol.

And, then, the discovery was made that the Admiral was drawing these impossible analogies not because he believed that they would withstand the batterings of knowledge and logic but because he wanted to know wherein lay the differences between the two countries. It was a way to start a really good argument. It was a wonderful ice-breaker. It tore through the social amenities, the unwillingness to annoy and antagonize the great and it gave the Admiral an opportunity to learn exactly what was thought about conditions in China by the various interests who could look to him for protection or for leadership.

The Chinese looked to Admiral Bristol to revise American policy in China. They anticipated that he had been sent to this country on a special mission. They believed that he would act more as a diplomatist than a naval officer. They thought that as he was new to the job, he would not be affected by conditions in this country, by the Nanking Outrage, by the break-down of diplomatic relationships. Then, it was discovered by them, as it inevitably must have been, that Admiral Bristol was an American Admiral first and that his interest in politics was, at the moment, secondary; that it did not, in fact, go beyond his duty as a man of force to protect himself against being involved in the use of force unless it is absolutely essential to American interests. They will learn that his job in China is primarily to protect Americans and American interests and that as an American Admiral, he will do his job, efficiently and well. That is discovering Admiral Bristol.

What About Chinese Trade-Marks?

Filing With Consulate Does Not Assure Protection

By Walter F. Wyman, General Sales Manager,
The Carter's Ink Company

The following article which we reprint from "*Export Trade and Finance*," deals with one of the most important subjects with which a foreign business man is faced in China.

The advice given in the article appears not to be altogether sound. Firms expecting to do business in China should register their trade-marks with the Peking Government and should register with the American Consulate to protect their interests. It is true that the Nationalist Government does not recognize the law promulgated by the Peking Government, but that should not deter foreign firms planning to do business in this country, as it is inevitable that sooner or later this law will be recognized by the Nationalist Government as they have recognized all other of Peking's codes, and when such recognition takes place, the firm failing to protect itself will be in difficulties.

Mr. N. F. Allman, an American expert on the trade mark question in China, has addressed a letter to the Nationalist Government, stating as follows:—

"We believe your Bureau will agree that provincial trade-mark laws would cause a great deal of unnecessary inconvenience and expense to trade-mark owners. A trade-mark generally is used throughout the whole of the country, and, in fact, very frequently throughout the world, and is naturally something that is ordinarily dealt with by national governments rather than by provincial or local governments. Therefore for the convenience of trade-mark owners, we wonder if your government would not take the above facts into consideration, and keep the trade-mark law of 1923 in effect throughout the country.

Sometime ago your Government issued an order that legislation was above and outside the question of politics and that laws already in existence in China would be continued in force by the Nationalist Government except where inconsistent with the Government. The trade-mark law of 1923 promulgated at Peking has been widely observed by Chinese and foreign alike throughout China and a trade-mark law would seem to be a good example of pure legislation and entirely removed from politics.

The Nationalist Government, at the present time, has this question under consideration, but should they take an unfavorable action, it would still be advisable for foreigners doing business in China to take every precaution to protect themselves.

* * *

In view of the political disturbances in China and the diametrically opposed views which have been expressed in public as to the status of trade-marks, it is perhaps worth the export executive's time to read a few paragraphs written after rather extended investigation.

In the first place, it is futile to offer a prophecy as to the probable political or economic condition in China—but it is safe to assume that regardless of the immediate outcome, there will be a final government in which the rights of all individuals and enterprises will be respected.

The Canton government has definitely refused to accept the trade-mark law of 1923, which, it will be remembered, was promulgated by the government at Peking. In its place it has developed and issued a trade-mark law of its own based, however, on the Chinese trade-mark law of 1923. From information received in mid-July of this year it would appear that this new Canton government trade-mark law is not working out to the satisfaction, nor coming up to the expectations, of the Canton government. Few applications have been filed under the new act, and there are many expressions of dissatisfaction.

There has been a persistent if not concerted effort on the part of one or more individuals to convey the idea that any foreign owner will be deprived of his trade-mark rights if he does not file a certified copy of his trade-mark registration with his Cantonese consulate. This thought is abhorrent to me and to many others, who are sincerely of the belief that regardless of the fortunes or misfortunes of internecine war, a world power like China would not eventually and completely recognize the rights involved.

On the other hand, those who prefer to take every step which may possibly be of service in the protection of trade-mark rights, may file certified copies of the United States registration of American trade-marks with the American consul general at Canton. But it should be distinctly understood that this filing does not have the effect of registration. It may conceivably serve at some future time as evidence of the claim of the exclusive right to the particular trade-mark. But it is impossible to ascertain from any reliable source what legal value would be attached to such filing by the Cantonese authorities.

In late July, when inquiry was made of the Department of State of the United States, it was made clear that the filing of trade-marks with the American consulate is not inconsistent with the policies of the State Department. There is no fee for such filing with the consulate. However, no uniform regulations have been adopted by the State Department, and each consulate fixes its own regulations.

As an informal opinion, it is my personal feeling in consideration of regulations which have been followed by the consular officers at Shanghai and Tientsin that it would be sufficient to submit a certified copy of the United States registration, together with several facsimiles of the trade-mark with a statement which would embrace the name and address of the applicant, show clearly his business location of his head office, and in the case of a corporation, the state in the United States of incorporation.

It is, however, the opinion of an outstanding authority in international trade-mark regulations, that this filing is unnecessary. After joining with me in this investigation, he feels that unless there is unusual value to a trade-mark, or some development which was not in existence at the time this brief consideration was written, it would be an unneeded expenditure of time and effort.

Imperialistic Russia in China

By Count Carlo Sforza*

MOSCOW is at work in China as if it possessed two faces and two souls, and this is indeed the truth. One is the soul of the Third International, which now directs its intrigues from the Kremlin only because it found it impossible to direct them from Berlin as Moscow had wished and hoped immediately after the Great War. The other soul, the other tendency, still clings to the traditions, the mirages and ambitions of pre-war Russian diplomacy which, probably unconsciously, had as one of its cardinal rules to seek a success in the Pacific when failure threatened in the West.

Taking into account the fact that no historical analogy or parallel is ever quite exact, I nevertheless venture to say that this dual Russian personality as I have recently observed it at work in Manchuria and Mongolia puts me in mind of that precious gift bestowed upon the British people—the possession of writers and clergymen able in perfect good faith to advance the highest moral reasons for the most concrete diplomatic action, with inevitable material profit to England. This dual personality explains in part—quite aside from any underhanded reasons of money or fear—the support and solidarity which the Soviet régime sometimes finds among the younger members of families and classes which have suffered severely from the Bolshevik revolution.

Aside from the actual imperialistic penetration of Russia, which as we shall see is particularly to be observed in Manchuria and Mongolia, I think it would be possible to show that in one instance in China the two Russian souls, the two tendencies, merge to work for one object, one goal. This goal is the struggle against England.

Of course, it is possible that the Russia of the Third International actually did hope to establish communism in China; this is within the realm of possibility, although to anyone who knows the Chinese world it would be almost sure proof of a surprising lack of political intelligence on the part of the successors of Messrs. Trotzki and Zinoviev. It is at any rate incontrovertible that the second Russian personality, which in spite of Bolshevism consciously or unconsciously still maintains the hatreds and traditions of the old Russia, hoped by the spread of these doctrines to deal a death blow to England, the twice hated, the twofold enemy; first, because she is the living symbol of European liberalism, the only hostile conception to Bolshevism existing on the old continent; second, because she is England, the mistress of India and the seas, the hidden but nevertheless real protectress of the small new Baltic states, Finland, Estonia, Latvia.

What does seem amazing from a psychological point of view is that in spite of the great zeal of the agents of the Western Powers in China in their fight against Soviet action, no use has ever been made of such definite facts—facts particularly likely to appeal to the Chinese mind, which always reacts to anything visible and tangible. The anti-Bolshevist campaign of the Western Powers in China has been conducted throughout with the most complete misunderstanding of Chinese character.

I happened to be in Peking immediately after the police raid on the Russian Embassy made by Chang Tso-lin, the Manchurian Tuchun, with the

secret encouragement of some foreign legations. I was able to examine many of the seized documents. Although I remain very doubtful as to the authenticity of the famous Red letter of British electoral memory, I am on the other hand absolutely convinced of the authenticity of the documents seized and published in Peking—as also that the Russian official denial was meant merely for home consumption.

These documents had all the earmarks of authenticity, both in letter and in spirit. They consist in a series of miserable espionage of diplomatic codes, of visitors to the foreign envoys, of corruption of petty officials, European and Chinese. They all bear the stifling mark of the old Tsarist police, only ten times more vulgar and silly. But all this—even the military instructions and the proof of the dispatch of munitions—did not and could not have the least influence on the Chinese. They looked and read; half of them smiled and the other half admired. They were but oriental tricks and lies against westerners, all these Russian activities. Why, should the Chinese feel disgust or irritation?

When he ordered his police raid on the Legation Quarter, Chang Tso-lin did not for one moment expect to strike the Chinese imagination no matter how many Russian documents he might unearth. What the scheming Manchurian Tuchun did intend was to show Europe and the western governments how valuable an ally he might become in the struggle against Bolshevism. For it is a well-known fact that his much advertised anti-Bolshevik hatred is assumed in order to obtain or extort financial subsidies from certain foreign governments. When Chang Tso-lin talks to his circle of intimates, he complains ironically that certain Legations pay him well in compliments but in nothing more substantial. Indeed, the famous Mukden war lord no more dislikes or suspects the Russians than he does the Japanese, of whom, by the

way, he is far less of a tool than is generally believed abroad. The plain truth is that the Japanese resent bitterly his constant if hidden opposition to all their plans in Manchuria; they complain, for instance, that he prevents the sale of any land to Japanese firms. But more than anything else Japan desires a pacific Manchuria for commercial development; and in spite of petty anti-Japanese intrigues Chang stands for peace and order in Manchuria. The Japanese Government knows quite well that, without Chang, the Tsitsihar Tupan would soon start to fight with the Kirin generals and the Kirin generals with the Mukden governor.

All this we have stated, as it were, in parenthesis and merely to prove that Chang Tso-lin's aims in raiding the Russian Embassy were different from those usually ascribed to him. After this, we must admit that the means employed to affect the Chinese should have been different. The effort should have been made to touch their *amour-propre*, always so sensitive. Emphasis should have been laid on the fact that the Russian "sacrifices" so cleverly advertised every day by Soviet agents are far from what they are cracked up to be. Instead of having sacrificed pre-war rights, the Russians merely accepted their loss, incurred like the German losses as a result of defeat in the World War; they knew that they could never hope to recover their lost extra-terri-



Marshal Chang Tso-lin

* Foreign Affairs.

torial rights in China. But it is an astounding fact that, in spite of, one might almost say under cover of, the campaign against "unequal treaties" Russia should be the only nation in the last four or five years to increase considerably its privileges and monopolies as a result of its action in Mongolia and Manchuria. While the treaty rights of all the other Powers were disappearing, Russia won for itself new spheres of influence, not unlike what might have been won prior to the Hay formula.

Either the disguised annexation of Mongolia, or the sovereign rights exercised over the Chinese Eastern Railway, if cleverly exposed, should have been sufficient to open the eyes of the Chinese as to the extent of Russia's "sacrifices" and as to the truth of Soviet "disinterestedness" in China.

Let us consider these two definite points, Mongolia and Manchuria, where the work accomplished and still being done would not be disowned by the former Imperial Ministry of Foreign Affairs at St. Petersburg.

Nowhere may the continuity of the Tsarist and Red diplomacy be better seen than in their dealing with the autonomy of Outer Mongolia. The Russo-Chinese agreement of 1915, negotiated in Peking by Mr. Krupenski, had succeeded in establishing "the exclusive right of the autonomous Government of Outer Mongolia to attend to all the affairs of its internal administration," but, on the other hand, had again recognized China's suzerainty and limited the number of the Russian "consular guards" in Urga to one hundred and fifty.

When an occasion came, Mr. Chicherin followed faithfully the policy laid down by his predecessor Sazonov. He created a dummy "Independent Mongolian Government," whose head was simply a certain Bodo, formerly clerk in the Imperial Consulate General in Urga, and had him ask Moscow to send troops to Urga to "defend Mongolian autonomy against China," although China was certainly, at the time, quite unable to assert any of her rights. Mr. Chicherin replied that he was glad to help the new Mongolian "Government." Russian troops went at once into Outer Mongolia.

Probably they would have come on any pretence. But the philosopher notes that the example was set by a previous act of violence from the opposite side. It was Baron Ungern at the head of bands of White Russians who invaded Mongolia and first drove out the Chinese from Urga in order to create there a military base against Bolshevik Siberia.

Now, besides all the power they have got in Urga, the Russians have surrounded Outer Mongolia with a Chinese wall much more effective than the old one which, below the plains of Inner Mongolia, ends, after so many thousands of miles, in the Yellow Sea on the Shanhaikuan beach. This is why it is so difficult to know exactly what is going on in Outer Mongolia. The Chinese Government itself—or rather the vague shadow which remains of it at Wai Chiao Pu—likes to surround it with silence. This is a typical example of the Chinese soul. Peking prefers to ignore, when it can, the blows to its *amour-propre* which it is forced to endure.

Among the many and contradictory rumors which one hears I shall only state here those facts which I have been able to verify myself through repeated contacts with Mongolians whom I met during my recent stay in Mukden (May-June, 1927).

Soviet banks, established by the Russians who have become the real masters of the country, have forced the Mongolians to hand over their ingots of silver in exchange for Russian paper money.

A small Mongolian army has been created under the command of Russian officers.

Every possible obstacle is put in the way of commercial intercourse with China; all the country's resources are being artificially directed toward Siberia.

Bolshevized Buriats from Siberia are being transformed by sleight of hand into Mongolians; and it is they who play the part of representative Mongolians when there is the slightest demand for such services.

Rich young Mongolians are removed by force from their encampments and their flocks and are transplanted to Moscow, there to be fed on Soviet pap. Some of them return to Mongolia with women picked up on the streets of Moscow and with horrible diseases. From encampment to encampment this is spoken of as living proof that the Lamaic hell is situated at the end of the Transiberian Railroad, but it is said in whispers only; Soviet espionage is everywhere, and the ancient, simple Mongol loyalty has become a thing of the past.

The Panshan Lama, the Pontiff of Lamaic Buddhists, has only recently begun to express himself on Bolshevism, after having been reticent for a long period. While in Mukden (in the spring of 1927) he abandoned his former real or assumed indifference and declared that "Bolshevism is the enemy of Buddhism." He has recently moved from Mukden to Peking, where he lives in one of the pavilions of the Forbidden City. Hundreds of Mongols come to him daily to receive his instructions. However, these instructions, owing to racial and religious reasons, cannot envisage more than passive resistance, not active opposition.

Hardened diplomats may find explanations and excuses for these violations of Chinese sovereignty and of ancient Mongol autonomies, for the demoralization of a race and a country which only yesterday was a delightful example of the old patriarchal virtues. But only the weak governments of a divided country could pretend to believe them.

There are, however, certain features—accessory perhaps—which it does not seem the Chinese can pretend to ignore, alive as they always are to matters of form. There exists an official Russian publication which can be bought in Moscow for a few kopeks. It is the "Diplomatic Annual of the U. S. S. R." for 1926. If one opens it at the letter M, one finds in the lists of sovereign foreign states with full diplomatic representation right after Mexico this other new nation: *Mongolia*. There follows the name of the "Ambassador" of the U. S. S. R. (the Soviets have adopted a single title, Ambassador, in their internal administrative organization for the heads of all their diplomatic missions; it is only abroad that these heads assume one of the old titles, Minister or Ambassador). After the name of the Ambassador to Mongolia come the names of his numerous secretaries and attachés.

Masters as they are in the art of propaganda, the Bolshevik agents in China, assisted by the cowardice and vanity of the Peking Government, have been successful in enforcing a complete silence as to their actions in Mongolia. The verbal campaign of the Chinese against "unequal treaties," which dates in great part from the arrival in Peking of Mr. Karakan as Ambassador of the Soviets, was very useful in this respect, and the Russians at once saw the dual advantage to be gained by it.

It was also under shadow of this campaign that Russia was able quietly to increase her influence in northern Manchuria by means of that powerful arm, the Chinese Eastern Railway.

Anyone interested in the Far East probably knows the present condition of this railroad. This is it, in a few words: The Chinese Eastern Railway crosses the northern part of Manchuria, linking Siberia to Vladivostok, now Russian territory, although up until 1860 it had belonged to China. Harbin, the great new city of the Far East, which has begun to rival Shanghai as a pleasure center, is in the middle of this line; it is the seat of the administration of the Chinese Eastern Railway with its hundreds of Russian officials, great and small. It is from Harbin that a line branches off to Dairen and Port Arthur. Only one-third of this branch line, from Harbin to Changchun, at present belongs to the Chinese Eastern Railway; the other two-thirds passed to Japan after the Treaty of Portsmouth which in 1905 ended the Russo-Japanese War; it is run in a most efficient manner by the South Manchurian Railway.

It should be remembered that the old trans-Manchurian Railway never did belong to the Russian Government, but was the property of a company constituted according to Russian law but receiving its seal from the Chinese Government, which means that it was a Chinese concern. The President of the Company had to be appointed by the Chinese Government and ownership of the shares was restricted to Chinese and Russian subjects, governments and official bodies being excluded. As there was not sufficient capital to build the railway, the money was borrowed from the Russian Government and stock was given them as security. The Russian Government was not an owner but simply a creditor, a distinction which has been frequently overlooked.

In 1924 the Chinese Government recognized Soviet Russia. The two Governments agreed that they ought to take over the Chinese Eastern Railway, without compensation of any kind to the Company. Among the dispossessed creditors as it happens are several capitalists of Western Europe and the United States. So far as I know, no representations on this subject have ever been made to Moscow.

It remains to this day a complete mystery what reasons—if indeed there be any honorable ones—prompted the Chinese Government to accept this arrangement. For these are the real results,

which make it neither more nor less than one of the "unequal treaties" against which the Chinese were already campaigning :

1. The Russian Government acquired the right to operate outright a railway on Chinese territory without any form of reciprocity for the Chinese Government, and in spite of the fact that no analogous case exists elsewhere in China.

2. The Russian Government consequently acquired a privilege not enjoyed by any other foreign Government in China, which is contrary to the principles laid down by the Washington Conference.

3. This privilege virtually makes a Russian zone of influence from Manchury (Russo-Chinese frontier) to Changchun.

4. This zone of influence is detrimental to other foreign interests, as American oil companies are prepared to testify, and as preferential tariffs in favor of Russian oil companies' prove.

5. According to this new accord, all officials and workmen on the Chinese Eastern Railway must be Russians or Chinese which is in violation of the principle of "equal opportunities."

6. All these officials and workmen are obliged to belong to Syndical Unions under strict control of the Soviet Executive Center of the Syndical Union in Moscow. This means that thousands of people on Chinese territory, and often Chinese subjects, have blindly to obey the orders of a foreign government ; and ironically enough it is the very government which most publicly renounced its extra-territorial rights (as a matter of fact, let us state it again, it had lost them against its will during the war). This state of affairs enables one to state that as far as extraterritoriality is concerned, the Russians to-day are better off than the Germans because every Russian in China to-day is an official of some kind, except in Manchuria ; and there they are under the "protection" of Russian institutions even more surely than in the old days of privileges and consular tribunals. It is true that White Russians exist by the thousands in Shanghai, where they are reduced to the lowest forms of labor ; but they no longer look upon themselves as Russians, and it is only to be expected that Moscow should completely disinterest itself from their fate.

7. Last but not least, the control of the vast revenues of the Chinese Eastern Railway remain exclusively in Russian hands. Not a cent of the approximately twelve-million-dollar average yearly profit of the railway is administered or even seen by the Chinese, which, of course, gives the Russians strong administrative and political advantages.

Personally, I have never believed the tales of huge sums of money flowing from Moscow to Peking or Canton for Bolshevik propaganda. But I am quite ready to believe that, controlled as it is by the Russian Government, and by a board whose able director, Mr. Lashevitch, is a sincere Red, a certain proportion of the revenues of the Chinese Eastern Railway may have been diverted to Bolshevik propaganda in China.

The silence which the anti-Soviet forces of Europe in China has thrown about these events is easy to explain ; it is due to the persistent mediocrity of our measures against Russian activity, a mediocrity due to psychological reasons upon which it is better not to insist at this time. But for the rare Chinese who know and keep silence—as do in China all those who wish to have nothing to do with Tuchun régime of violence—the reasons are quite different. They say among themselves (and this is not an hypothesis but something which I myself have heard said) that the Western Powers attack Russia for everything except for those acts and intrigues which they themselves would like to be able to imitate. For nowadays the best and wisest men in China share with the people one old feeling which is becoming universal—hatred of all foreigners.

Champion Spark Plug Wins Fight Against Pirating in Japan

PIRATING of American trade-marks and their application to goods of inferior quality has met a setback in Japan, according to reports which have just reached this country of a victory obtained by the Champion Spark Plug Company, of Toledo, Ohio,

over a number of manufacturers and dealers in Tokio, Nagoya, and Osaka.

Last Spring the Shanghai agent of the Champion Company discovered a sample plug retailing in Shanghai for half the price of the Champion's plug, of which it was a good imitation. Container, guarantee and advertising matter differed from that accompanying the genuine plugs only in the misspelling of several words. Investigation by C. F. Cahusac, patent attorney at Tokio, and C. Stillwell of his staff, located the manufacturers in Nagoya, and selling agencies in Tokio and Osaka. Suit was instituted May 5, the manufacturers being charged with misrepresenting the place of origin of the goods and fraud in the use of another party's trade name and place of manufacture, the action being taken under the International Convention regarding fair competition. The Japanese court at Nagoya announced that it would prosecute the accused under the fraud statutes of the national criminal code.

Two days after suit was instituted, the accused requested arbitration. The request was disregarded and the dealers, anxious to avoid publicity, organized a meeting at Nagoya and agreed after a 36-hour conference to surrender all their imitation goods to Mr. Cahusac.

Steps were also taken, pending trial, to impound the stocks of the Daiichi Jidesha Kumiai, Nagoya, the manufacturers, and the Iwayama Shoton, Osaka, a large wholesale house which had exported the illicit product. Seven principals of the factory when brought to court for preliminary hearing attempted to influence the court in their favor, but the public procurator, W. Ichihara, declared that he would prosecute to the extent of the law, saying that the defendants had given no thought to Japan's good name abroad.

The defendants then published in all of the Japanese dailies, and in two English-language papers as well, an apology over their own signatures and with the dealers deposited Y.10,000 in cash to be held for a year by the Champion Company as security for future good behavior. The terms upon which the dealers escaped prosecution were included in an agreement between Mr. Cahusac, representing the American firm, the Japanese manufacturers, and the retailers, the gist of which follows :

1. The Champion Company agreed to withdraw its criminal suits against the manufacturers and dealers.

2. It also agreed to waive all claims for damages, except as provided below.

3. The manufacturers and dealers agreed to deposit Y.10,000 to the credit of the Champion Spark Plug Company for one year, to be forfeited if the agreement was broken in any particular.

4. The manufacturers and dealers agreed to make a public apology at their own expense in five papers in Tokyo, two in Nagoya, two in Osaka, and one in Kobe.

5. The manufacturers and dealers also agreed to deposit Y.2,000 with Mr. Cahusac to defray preliminary expenses that might be incurred if the agreement was broken.

6. The manufacturers and dealers agreed to turn over to the Champion company's attorney within three weeks all spark plugs in stock in Nagoya, Osaka, Tokio, and Yokohama, and to make every effort to obtain all such plugs from other places.

7. The manufacturers and dealers agreed that Y.5,000 would immediately become forfeit if either of them defaulted on the agreement and that the entire surety would be forfeited if both defaulted.

8. The Champion Company agreed that the dealers would not be discriminated against in respect to handling genuine Champion plugs.

9. The manufacturers and dealers agreed that the Champion Company should immediately publish at the expense of the infringers any infringement of any article of the agreement.

The *Kobe Herald*, commenting editorially under the head "Trade Piracy," said :

"These efficient proceedings were necessarily costly, five attorneys being engaged in addition to the legal representatives of the complaining company, but the point gained is a valuable one. It is a victory for honest trade, a heavy blow to a class of unscrupulous industrialists and traders in Japan whose activities for many years past have brought the whole country into disrepute commercially. For years foreign manufacturers have been putting up with such abuses on the assumption that they could not be stopped, but a British patent attorney has at last put an effective stop to one glaring case of infringement, and there are others.

Australasia and the Orient

Possibilities for the Future as Seen by a Blair Representative Who has Travelled Extensively in the East and Who is a Close Observer of Developments in that Rapidly Changing Part of the World

By Birch Helms

IT would appear as if the center of gravity of future world development is gradually being shifted from the Atlantic shores towards the Pacific. If this supposition is correct, Australasia and the Oriental countries will present exceptional opportunities for future financing, trade and commerce.

The countries which at present are coming to be large borrowers in the American market are Australia, Japan and the Dutch East Indies. Later on New Zealand, China and India will meet some of their financial requirements in New York City, although the probability is that all these countries will strive to maintain two constant, stable markets for their securities, namely in London and New York. The competition between the English and American markets for Australasian and Oriental bond issues will become more active as each year goes by.

Blair & Co., Inc., with its accustomed far sighted vision has analysed this perspective and has thus been in touch with future developments in these far corners of the Pacific, especially with Australia, Japan and the Dutch East Indies.

Australia is a virgin land with wonderful pastoral prospects, and in time will feed and clothe the world with its tremendous resources of wheat and wool, beef, dairy products and fruit. Japan is an ancient land with illimitable man and water power that promise to convert an agricultural community into one of the greatest industrial units the world has witnessed, not unlike a second England.

Both countries have most promising futures but in attaining the peak of their development large investments of foreign capital will be required. Here is where the financiers of England and the United States will find a useful opportunity for the investment of their funds.

Through the adoption of a protective tariff Australia is endeavoring to build up an industrial community in its midst and this federal program is meeting with considerable success, for large foreign corporations are establishing their manufacturing plants in the several states of the Commonwealth. However, pastoral and agricultural development seems to be the great promise of Australia for the next few years as the climate, like that of California, is very salubrious and equable. In fact the average man in Australia lives under better conditions and has more time for recreation than does any other individual on the face of the earth, the American not excepted. It is an ideal country for pioneering Britons and Americans to settle in, just was the American Far West in the early eighties. The pioneer spirit is welcomed in Australia, for it is this spirit of the country, which is evidenced

in the establishment of a new capital at Canberra for the Commonwealth, now 26 years old.

Japan with its 66,000,000 inhabitants and limited island territory of 150,000 square miles is quite a contrast to Australia with its 7,000,000 inhabitants and 3,000,000 square miles. Like Australia, Japan has much beautiful scenery and imposing mountains. The Japanese are very industrious, frugal, patriotic and devoted to their Emperor. Within the span of a few years they have elevated their country from a state of feudalism to the rank of one of the leading world powers. Because of their expanding population, the Japanese are extending their sphere of influence up through Korea and into Manchuria, and in both these countries the Japanese government has accomplished marvelous results. The South Manchurian Railroad and the Korean Railroads can be counted among the best administered organizations in the world and riding on their trains reminds one of travel on the comfortable trains of England and the United States.

For centuries Japan has been a primitive farming country, where its millions of natives have grown rice in their paddy fields. Several decades ago the huge water power resources of Japan were

recognized as a most valuable asset. The utilization of this water power amid her towering mountain ranges and tumbling streams has constituted an important forward step in the industrialization of the country. Scattered throughout Japan are now huge public utility and hydro-electric plants, from which electric current is transmitted to the many growing industrial enterprises of the Empire. In such a manner is Japan directing her man power from field labor to manufacturing. With her cheap and industrious labor aided by her hydro-electric power Japan is now underselling her Oriental competitors in India, China and the Dutch East Indies, principally in textile goods and handicraft. Large cotton mills have been built in China with Japanese capital and in the future when China settles down it is finally anticipated that much can be accomplished in the Celestial Empire along industrial lines with Chinese labor, Japanese management and American capital.

Australia is solving her problems in a practical and sensible way, as is Japan. Australia's only serious drawback is lack of water during dry seasons or periods of drought, and she is meeting this contingency admirably by artesian wells and the construction of huge dams.

Japan's great task is to provide sustenance for her growing population and she is providing for them by industrializing the country and making more occupations and better living conditions for her people.



Baron Okura and Colonel Helms

Rich Heilungkiang

ASIDE from trade with Russia, gold-mining has been an important industry which has contributed to the prosperity of the place, but of late this has also declined, owing to the scarcity of labor; says the Commissioner of Customs for Aigun, in his 1926 report. This scarcity, however, may be due to the low wages paid in this region in comparison with those paid on the Russian side.

It is fortunate that, at this critical period in the affairs of the district, exceptionally clever and far-seeing measures have been taken by the local authorities to capitalise the very rich natural resources of this part of the Heilungkiang province. A bureau of immigration has been opened, which has agents in Chihli advertising the great opportunities for agriculturists here. Reduction of fares on steamers has been secured; an existing ban on the export of grain to Harbin has been cancelled, which should result in a better market for the farmers and greatly increase their buying capacity; and the tax on the export of timber has been reduced to an extent that will permit its being sold at a profit in the open market of Harbin.

With a large population farming the fertile hinterland, the prosperity of the region will be assured, independently of trade with Russia. One of the biggest factors, however, in bringing this desired end will be the construction of the long-projected railway to form an outlet to the South. The peaceful political conditions existing in this part of the Three Provinces, in contrast to the unrest and disorder in China Proper, should prove an attractive inducement for a change of residence to those living in the war-infested regions to the South.

In September 1925 a newly formed official organisation, known as the Tung Pei Navigation Bureau, took over the steamers of the

Wutung Company. During the winter these were put in order, and for the navigation season just closed it is estimated that a profit of some \$4,000,000 has been made. This excellent showing may be attributed to careful management and favorable crops. The fleet of this bureau has now been further augmented by the transfer to it of the steamers of the Chinese Eastern Railway by the orders of the Mukden authorities. It is satisfactory to learn that a large share of the profits noted above are being set aside for further increasing the efficiency of the bureau's steamers and for increased emolument to its staff afloat and ashore.

The gross value of the trade of the port for 1926 was some Hk. Tls. 3,100,000, as compared with practically the same figure for 1925 and Hk. Tls. 7,400,000 for 1920, the latter being the record year in the port's history. While the decline from the figures of 1920 is, to a considerable extent, due to the closing of the frontier, the greater share is to be attributed to the cessation in the collection of duty on overland cart traffic in 1924; but while the importance of Aigun as a trade port may have declined economically the activities of the Customs have been fully employed in another and important direction—that of looking after China's interests on the rivers of the Sino-Russian frontier.

Through the agency of the Chinese Amur Aids Commission agreements have been drawn up with the Soviet authorities, during the past four years, for the joint maintenance of aids on the Amur and for the payment of China's share, for which the Customs has undertaken the collection of the necessary river dues. Negotiations are now under way for a similar agreement affecting the Ussuri River, on which Chinese shipping has greatly increased of late.



Street in the Chinese City of Aigun.—This City is unlike all other Chinese Cities. All Houses are Wooden, built Russian Style with Framed Windows and Iron Stoves

Inspectorate-General of Mines for Chihli Province

By the order of the Civil Governor of Chihli province an Inspectorate-General of Mines in Chihli Province has been formed for the protection and development of mining enterprises in the province. The notification says: "The economic and financial stability of a country depends on the development of industry, which in turn depends on natural resources. It is well known that the province of Chihli is rich in mineral deposits, equal in extent almost to that of the whole country, and covering in area several hundred square miles extending from the mountain ranges of Chang-Pai Shan in the East (Mongolia), and Tai-Hang Shan in the West (Shansi). Along with the proper development of mines, commerce will flourish with ease. At present, excepting a few well-known companies, the result shown is very poor. The reasons are probably due to insufficient capital and bad management. The Inspectorate will now assume the responsibility of encouraging and protecting the mining industry and as a preliminary step a number of persons have been sent out to investigate present conditions. All mining areas that are not worked, or have stopped working, will be taken up and considered along modern lines for operation. Existing mines will be given attention for improvement so as to obtain full benefit of the natural resources. Also transportation facilities will be arranged for by efficient handling of rolling stock, and labor trouble prevented by issuing fair working rules for general protection. All these points are now under careful consideration and when

sufficient information on the present conditions is available the Inspectorate will devise proper means for efficient working and issue same from time to time for general guidance. The above notice is given for observance by all persons connected with the mining industry."—Signed Yen Shih-ching, Inspector-General; Chao Ching-hua, Assistant Inspector-General.

The Tahushan-Paiyintala Line

Construction work on the new Tahushan-Paiyintala Line is going on, regardless of Japan's protests, says the *Manchuria Daily News*. Seven Chinese engineers sent from Mukden are supervising the work. Out of 17 stations to be founded, 15 have already been completed. So far \$4,500,000 odd has been expended for construction purposes. A foreign engineer, who inspected the line says the earth-work had been finished up to within 10 miles of Paiyintala, while the construction-work had advanced within 40 miles of Paiyintala, and the work was being pushed forward at the rate of 1½ miles per day. At this pace the entire construction work will be completed by the end of October. The Chinese engineers are said to have expressed their intention to resume work next spring to extend the line from Taonan northward to Talai and to Chaotung. The engineers are all Chinese lent by the Peking-Mukden Line.

Ores and Industry in the Far East

Exploding the "Eldorado" Myth of China's Unlimited Mineral Resources

ABOUT ten years ago, the Chinese Government embarked on a publicity campaign to induce foreign capital to develop the resources of the country. China was advertised as the "Eldorado of the Far East," with unlimited reserves of coal and minerals whose exploitation would enable the country to compete successfully with and in time undermine the industrial supremacy of the West. In the world wide search for war minerals, the New York Orient Mines Company (a subsidiary of the American International Corporation) dispatched to China a staff of geologists and mining experts under the direction of John Wellington Finch to investigate and report on its mineral resources. From 1916 to 1925, this group carried on a most exhaustive study of China's mineral reserves and found only one deposit in Yunnan which seemed worthy of extensive development. Even this was subsequently abandoned after costly preliminary work. The studies made by this company are the most comprehensive ever conducted by a private concern in the Far East. That nothing tangible has resulted in a commercial way, would go far towards strengthening the belief that the Eldorado so widely advertised was only a myth created for propaganda purposes.

The British Commercial Attache at Peking was the first to prick the bubble, for in his report on the Trade of China for 1919, he invites attention to the fact that the stories of China's unbounded mineral resources have been greatly exaggerated. Still, the Eldorado story would not down. In nearly every study of Far Eastern industrial possibilities the inexhaustible mineral resources of China were employed as an argument that sooner or later she would prove a serious competitor to our basic industries. The confidential reports of mining experts who had been over the ground however gradually leaked out and doubts began to be expressed as to China's ability to develop an industrial civilization based on her ore reserves. It was with considerable surprise, not unmixed with incredulity, that this belief was challenged. Experts were stating as the result of repeated explorations, that the Far East, estimated by Western standards, is seriously deficient in some of the most important minerals and especially in iron, the basic metal of our civilization.

Professor C. K. Leith in 1925, at the Williamstown Institute of Politics, and in his subsequent article in *Foreign Affairs* (April 1926), set forth this conclusion of the mining engineers and indicated some of the consequences of so vital a defect in the equipment of Far Eastern countries. One of the conference groups of the Council on Foreign Relations, that on the Far East conducted by Mr. H. Foster Bain, devoted its sessions of 1925-26 to an examination of this subject. It was clear that the evidence for the view as to the serious paucity of Far Eastern mineral resources must rest on a series of careful technical studies made by highly qualified mining engineers and geologists. Since it is also apparent that their findings are of fundamental importance, as affecting the whole problem of Far Eastern development, and therefore should be more generally known, the Council on Foreign Relations requested Mr. Bain to prepare as the first of its Research Publications, a report on the mineral resources of the Far East.

No more highly qualified expert could have been selected for that important task. Mr. H. Foster Bain is one of the foremost mining engineers and geologists in the United States. For a number of years he was head of the Bureau of Mines at Washington and is now secretary of the American Institute of Mining and Metallurgical Engineers. He also served as chief of explorations to the group directed by Mr. Finch in its exhaustive studies of China's mineral resources. Mr. Bain's conclusions based on facts compiled from the highest authoritative sources, dispels the bogey of an industrialized Orient competing successfully with Western manufacturing nations. The stocks of essential minerals are not there. China dominates the world market in antimony. The world's consumption of the metal is from 17,000 to 18,000 tons per year, of which China supplies 13 to 16,000 tons. About 63 per cent. of the world's supply of tungsten also comes from China, the total output in 1924 being estimated at 3,500 metric tons. China can also be counted on for about 8,000 to 10,000 tons of tin per year, of which, over 80 per cent. comes from the Kotchiu district near Mengtse in Yunnan. These three items complete the list of minerals produced in the country having any important bearing on the development of world industry.



Mr. H. Foster Bain.—The Eminent American Geologist and Mining Engineer, Author of "Ores and Industry in the Far East" who Explodes the Myth of China's Great Future as an Industrial Nation.

China is exceptionally rich in coal deposits though there are wide variations in the estimates that have been made of the amounts present. In the latest official report of the Geological Survey of China its present director Mr. W. H. Wong, estimates China's probable coal reserves at 6,252,000,000 tons of anthracite and 17,183,000,000 tons of bituminous, a total of 23,435,000,000 tons. Wong adds the following comment:

"In all these reserves a depth to 1,000 meters is assumed and only seams with a thickness of one meter are taken into account; if we include thinner seams and increase the depth, it is probable that 40 to 50 billion tons would be a good figure for the total Chinese coal reserves. This reserve would be sufficient to supply China 2,000 years if her present consumption of about 20 million tons a year is taken as the standard; but it would only last 70 years if we take as a standard the annual American output, which is 680,000,000 tons."

Despite civil wars and interference with transportation, the estimated output of coal for 1925 was over 25,000,000 tons. Although China's coal reserves are ample for any increase in demand for household and industrial purposes, there are few deposits that can be converted into high grade coking coal for blast furnace use. Modern blast furnaces to be operated economically require deposits yielding suitable ore in millions of tons. As Mr. Bain points out: "it may well require 10,000,000 tons or more of ore to supply one furnace for a period sufficient to amortize the cost of the plant and make the business profitable." It requires one ton of coke for every two tons of iron ore to produce pig iron, so the ability of China to compete successfully with the West in the production of this basic material depends largely upon her coal deposits capable of being converted into high grade coke. These known fields of good coking coal are not numerous and if the Chinese should come to use coal as freely in their homes as do the English and Americans, the increased demand for this purpose together with increased industrial needs, will materially diminish the supply for coking. Mr. Bain quotes the report on "Blast Furnaces and Steel Mills In China" by Mr. Lansing Hoyt, U. S. Trade Commissioner which sums up the possibilities with the following conclusion: "until coke is delivered at the furnace stock-house at a cost approaching that in America, China will continue as she is to-day, a country without a steel industry." Mr. Hoyt went even further than this in his report, stating that: "Every furnace now operating on China should on the basis of cost and relation to selling price, be blown out at once." He found that all furnaces then operating in China were doing so by virtue of a government subsidy in some form.

In arriving at the estimate of China's iron ore resources, Mr. Bain again accepts the summary of Mr. Tegengren, the expert attached to the Chinese Government Geological Survey. This summary follows:

	Actual		Potential	
	Tonnage of Ore	Tonnage of Metallic Iron Contained	Tonnage of Ore	Tonnage of Metallic Iron Contained
Archean Ores ...	295,000,000	110,000,000	477,000,000	159,000,000
Sinian Ores, Hsuan-Lung Region ...	28,000,000	15,000,000	64,000,000	36,000,000
Contact—metamorphic Ores ...	73,000,000	41,000,000	9,600,000	4,800,000
Other Types ...	—	—	5,100,000	2,400,000
Total ...	396,000,000	166,000,000	555,700,000	202,200,000

Mr. Tegengren comments on the above as follows:

"It is at once evident that 950,000,000 tons of iron ore is by no means much for China and even if continued investigations would—what seems rather improbable—raise these known resources to the double amount, the general situation would not be materially altered. One thing, therefore, is certain: China can no longer be regarded as a storehouse of inexhaustible future reserves of iron ore, to be drawn upon when the supplies of other countries are beginning to give out. On the contrary, her iron ore resources must be termed very modest, or even scant, when her potentialities of industrial development are taken into consideration, and the strictest economy would be indispensable to guard against future unpleasant contingencies. By way of illustration it may be pointed out that the total quantity of iron ore (both actual and potential) represented by the figures above would be consumed by the iron industry of the United States within less than nine years. And

it is to be noted that the bulk of these resources consists of the low grade Manchurian ores, the exploitability of which is still somewhat problematical, or which at any rate are far below the average standard."

Japan and the Han-Yeh-Ping

China's commitments to furnish ore and pig-iron to Japan has an important bearing on her future position as an industrial nation. It is well known that the Yokohama Specie Bank has advanced over Yen 57,000,000 to the Han-Yeh-Ping Corporation, of which Yen 45,000,000 is still outstanding. In return for the original loan in 1911 the Chinese agreed to furnish Japan a minimum of 400,000 tons and a maximum of 600,000 tons of iron ore annually over a period of years at a fixed price of \$3.00 Mexican per ton. Due to subsequent war conditions, abnormal increase in the market price and costs of production together with interruptions arising from the prolonged civil war, the Han-Yeh-Ping Corporation has been unable to comply with its part of the contract and to save their investment the Japanese have been compelled to advance no fewer than 22 loans to keep alive an enterprise that to date has been a steadily losing proposition.

The Geological Survey of China estimates the iron ore reserves of the Han-Yeh-Ping iron properties at 10,500,000 tons containing 59.5 per cent. of metallic iron, or a total of 6,250,000 tons. To faithfully comply with its original contract with Japan the Tayeh mines of the Corporation would be exhausted in 17 years.

The prosperity of Japan's manufacturing enterprises depends largely upon a constant supply of imported iron ore and pig and she is therefore vitally interested in the prosperity of a concern obligated to furnish its quota of raw materials under contracts which called for a constant stream of fresh capital to maintain it as a going concern. The steel mills at Hanyang are obsolete; a poor security for the loans advanced. The coal mines at Pinghsiang have been Sovietized and are now being operated by the Labor Union of Anyuan. The only tangible security for the Japanese loans would appear to be the iron mines and deposits at Tayeh. At the height of the anti-Japanese movement several years ago when war between Japan and America loomed on the horizon, American writers professed to see in Japan's loans to the Han-Yeh-Ping Corporation a determined attempt to secure control over the properties for war purposes. The facts, however, have been gradually disclosed and we now find that the total assets of the Chinese company are estimated to be worth about \$52,000,000 silver, or, at the present rate of exchange, approximately what it owes to the Yokohama Specie Bank. In the past, Chinese nationalism, supported by foreign opinion, has violently opposed any interference on the part of Japan in the management of its premier industry and as a consequence, the Japanese have seen the value of their security rendered practically worthless and their receipts of ore and pig dwindle to almost nothing. Should Japan now demand equal representation in the direction and management of the Han-Yeh-Ping Corporation, would it again be construed as a deliberate attempt to take advantage of the Chinese situation and build up a source of supply for war materials?

Mr. Bain does not touch on these matters in his illuminating study but to those who know something of the inside facts surrounding this situation, his conclusions must materially strengthen the Japanese position.

Iron Resource of Japan

As to Japan's iron resources, Mr. Bain bases his conclusions on the reports of the Imperial Geological Survey which estimates the actual reserves at 56,000,000 tons in Japan Proper and 4,000,000 tons in Korea. An attempt is now being made to develop and use certain beds of magnetic iron sand found in the Tertiary deposits of the northern part of Hondu. Mr. Bain points out that the metallurgical problem connected with the profitable exploitation of these deposits is complicated by the fact that the iron is in two forms and by the presence of Titanium. An article on the development of these deposits was published in the *Engineering and Mining Journal* of February 5, 1927 and reprinted in the July 1927 issue of the *Far Eastern Review*. A further article, quoted

below, recently appeared in the *Wall Street Journal* (September 14) which brings the subject up to date.

Mr. Bain concludes from all the data obtainable that Japan, the largest consumer of iron and steel products in the Far East, possesses iron ore resources entirely inadequate to her needs, but despite this disadvantage, the Japanese have made and are still making, a brave and determined effort to build up an iron and steel industry. The figures of production, imports, and consumption for recent years are given in the following table:

JAPAN'S PRODUCTION AND CONSUMPTION OF IRON AND STEEL
In 1,000 Metric Tons

	Pig Iron Production			Imports			Exports	
	Japan Proper	Korea	S. Manchuria	Total	Pig Iron	Refined Iron and Steel	Pig Iron	Refined Iron and Steel
1912	—	—	—	—	—	—	—	—
1913	240.3	—	—	240.3	265.1	515.9	0.4	11.6
1914	300.2	—	—	300.2	169.1	387.2	0.2	11.3
1915	317.7	—	29.9	347.6	166.8	231.0	0.4	11.8
1916	388.7	—	49.0	437.7	232.0	426.8	1.6	14.2
1917	450.7	—	38.6	489.3	232.2	584.8	3.3	31.1
1918	582.8	42.7	45.7	671.2	225.1	603.7	1.1	47.3
1919	505.5	78.4	106.1	780.0	283.2	660.2	1.9	61.2
1920	521.1	84.1	116.0	721.2	348.6	979.2	2.5	44.6
1921	475.9	83.0	93.9	652.8	227.1	601.0	—	23.7
								1,467.2

Mr. Bain points out that it is difficult to make sure of accurate figures covering all the items in such a table as the above owing to differences in the basis of the collection of figures and in definition. For the succeeding years the Japanese Mine Owners Association give the following figures for pig iron production, presumably including Korea and Manchuria: 1922, 642,000; 1923, 710,600; 1924, 698,200 metric tons.

There is a theoretical furnace capacity in Japan for making about 1,500,000 tons each of iron and steel. In 1924, the actual production of pig iron was 698,000 tons and of steel, 906,000. The largest plant is the Yawata near Moji, owned by the government and including five blast furnaces having an aggregate capacity of 400,000 tons, and a steel plant of 525,000 tons capacity together with various finishing plants. There are also the Kamishi iron and steel works, the Nippon, the Sumitomo, the Kokura, the Mitsubishi and others in Japan Proper and the Anshan, Pensihu and the Tayeh in China. The furnaces in Japan draw ore from domestic mines and also import from Korea, China, Malaya, India and at times from the Philippines. The present steel making capacity of Japan is smaller than the actual output of Luxemburg which was credited with 2,192,700 tons in 1926, and if all the plans proposed in the period of war expansion were realized and an output of 3,000,000 tons per year built up, it would still be less than the present actual output of Belgium, 3,313,400 tons. Such an output would be but a modest one for a country situated as is Japan and would constitute no serious threat to business competitors. Such information as is available gives no suggestion that Japan can manufacture for export or will cease to be an importing nation if even the present degree of conversion to a metal-using basis of industry is maintained. If Japan comes to rival Western nations in iron and steel consumption per capita, large quantities must be imported.

Development of Japan's Iron Sands

A possible solution of Japan's iron problem may perhaps be found in the development of its iron sands. There has been considerable controversy as to whether the new process is a metallurgical success or not and the most recent contribution to the subject in the *Wall Street Journal* would seem to indicate that although this obstacle has been overcome some doubt still exists as to its commercial possibilities.

Goro Matsukata, who has pinned his last hope on the project and sunk his last dollar in it, declares it will. He quotes figures. He cites alleged facts. The Kuji works, he says, can manufacture sponge iron to-day for 21 yen a ton. It can sell its product for ¥38-40 a ton. The ore fields, which consist of deposits of beach sand on the western coast of Japan, sometimes more than 100 feet thick, are said to be well-nigh inexhaustible. A government survey of a portion of the field estimated deposits of more than 150,000,000 tons in an area of 22 square kilometers.

If Goro Matsukata is right, the success of the Thornhill and Anderson process bids fair to bring about a great change in Japan's economic system. Hitherto Japan has been viewed lightly as a metallurgical country. She does not have good coking coal. Her deposits of ordinary iron ore are not easily workable. Even with high tariffs, Japan has not been able to compete with European and American producers, in spite of freights they must pay. The new sponge iron process does not need good coking coal. It operates on gas producers, in which lignite perhaps may be used. The iron sand deposits are in such form they can be mined by the open cut method. The overburden averages less than 10 feet. Thus, if Matsukata is able to turn out his sponge iron at a profit, Japan will be on the road to a new day in steel.

Matsukata's History

Goro Matsukata is the fifth son of the late Prince Masayoshi Matsukata, one of the outstanding figures of Japan's conversion to modern methods of finance. The Matsukata family has been concerned in many ventures, the most outstanding of which are the Fifteenth Bank, now closed and awaiting the hand of succor and the Kawasaki Dockyard Company, all but lifeless beneath the load of its debt. Other interests, once prosperous, no longer amount to much. Goro Matsukata has accordingly staked his last chip on the Kuji Iron Works. If he wins, he hopes to be able to retrieve the fortunes of his family. If he fails, shikata ga nai—it can't be helped.

American engineers who worked on the job do not hold out many hopes for the Kuji Iron Works. They point to countless examples of inefficiency which to them were unpardonable.

Goro Matsukata answers all these arguments. Every fact cited by Mr. Anderson is true, he says, but conclusions are wrong. As he sees it, the governing factor is he can, and does, make sponge iron under all these handicaps at a price low enough to yield him handsome profit.

The Labor Situation

Mr. Matsukata admits far too much labor is employed. However, he says, reductions in personnel are proceeding gradually. In view of the fact that most of the workers are also farmers, it is necessary to have some margin of safety, as in planting and harvesting seasons they may fail to show up for work. At present about 100 workers are employed. Women are paid 60 sen (less than 30 cents) a day and the men 1.20 yen (less than 60 cents). The average is about 90 sen. They work two 12-hour shifts.

At present Kuji plant, which consists of two 150-ton furnaces, is operating but one. This handles 150 tons of ore and turns out 50 tons of sponge iron a day. Mr. Matsukata has given Dow, Jones & Co. the following rough outline of the cost of making 50 tons of ore:

	Yen
Lignite for reduction, 25 tons at 5 yen	125
Hokkaido coal for gas, 17 tons at 14 yen	238
Hokkaido coal for power, 14 tons at 12 yen	168
Ore, 150 tons at 1.14 yen	171
Labor, 100 men at .60-1.20 yen	90
Overhead and miscellaneous costs (about)	258
Total per 50 tons of sponge iron at plant	1,050

This means a price of about 21 yen a ton at the plant. Pig iron is selling at 50 yen a ton in the general market but, because of the strangeness of the new product, steel-makers hesitate to pay more than 38 or 40 yen for sponge iron at present. Goro Matsukata is confident this condition will be altered in the near future. He expects other savings when he is able to ship in large quantities by water, rather than in small quantities by rail.

The total cost of the plant and all properties connected with it was 3,500,000 yen.

There are two sponge iron furnaces installed in the plant, one of which has been in operation. The sponge iron furnaces are 60 feet outside diameter, each with an annular hearth 12 feet wide. There are 72 carborundum tubes in each furnace. Producer gas is burned in these tubes.

The Depreciation of Rolling Stock

By H. Stringer, B.A., A.M.I.C.E.

THE economic factors controlling the depreciation and scrapping of railway rolling stock appear to be of a different order to those governing other machines.

In the latter case improved designs, and increasingly heavy repairs may decree scrapping from the ordinary economic view point. But is this view point, as applied to rolling stock, in any sense the ordinary one? Is not rolling stock railway life blood and is not any withdrawal conducive of railway anaemia, for up to a limit which Indian and American practice seems to indicate as about 25 loads per car per year the more cars in service the less time under repair, the better for the railway.

Again rolling stock is not as other machinery. It is not, motor-car built delicate and liable to irreparable injury by vibration. It has none of the delicacy of the high speed engine nor can careless handling damage it hopelessly as in the case of electrical machinery. Entire wreckage as the result of accident is much more rare than in the case of other machines.

Again the design of cars has crystallised, the high capacity car except in England has been almost universally adopted, continuous brakes can be fitted if not provided, automatic couplers also with slight structural alteration.

In the case of locomotives modern improvements can also be installed as a rule with sufficient economy to warrant them. Thus superheaters can be fitted to old type engines and the same applies to feed water heaters. Again for those engines not considered worth while there is always a sphere of usefulness in pick-up goods traffic requiring a lot of shunting on sidings not up to the weight of main line heavy goods engines.

A further and decisive factor is that rolling stock earns all or nearly all a railway's money. For capital cost rolling stock earnings are enormously high. Thus on the Chinese Government Railways in the 1922 report rolling stock was capitalised at \$118.2 millions. The gross revenue earned was \$99.5 millions so that rolling stock carried merchandise to the amount of 48% of its capital value during the year. Rolling stock is thus in that category of machinery where earnings are enormous compared with capital cost but where these earnings have to meet the interest on a large amount of necessary but unproductive capital expenditure. This indicates the costliness of keeping wagons and engines a long time under repair and the sound policy of keeping this percentage low. It also serves as an indication of the extent to which the repair process should be pushed in the maintenance of vital machinery.

The question arises as to the life of a machine. The life of a machine in theory is obtained by equating the capitalised cost at compound interest of the average annual repairs for the life period to the original capital cost. Thus the average repair charge per wagon on the Chinese Railways in 1922 over an eight year period amounted to \$73.22 per annum. The bulk of Chinese government rolling stock is of 30 tons capacity costing before the war with steel underframe \$3,000. (£250). The average life of rolling stock when the above repair charge is capitalised at eight per cent. is 19 years this being the period when the capitalised repair charge will amount to \$3,000. The average repair charge per locomotive over a similar period amounted to \$3,024 per annum and the pre-war cost of a tender locomotive with 16 ton axle loads suitable for the standard 85 lb. rail was about \$40,000. (£3,400). Under the same conditions as above life would amount to 10 years only.

The application of this theory to locomotives remains at variance with actual facts even when the enormous rise of the price of material and to a certain extent of labour is taken into consideration. Thus if the present day cost of rolling stock is taken as the life criterion. The 30 ton wagon would now cost \$4,000 and its life according to the above repair basis would be 22 years while the locomotive costing now \$68,000 (£8,000) would have a life of 13 years only, still very largely at variance with actual practice in any country.

For instance the average age of locomotives on the two principal Chinese Railways was 13 years in 1922 and the average for the whole system 10 years. Thus if we consider a wagon in detail it will be found that fully 78 per cent. of the cost of a car lies in the bogies,

trucks and brake gear. Opinions as to the life of the truck itself vary but it cannot be less than 30 years. As for the life of axles it is only customary to withdraw them for journal wear—not less than 25 years.

Tyres can be renewed indefinitely. In any case the life of unbraked stock can be safely placed at 20 years while braked stock has a tyre life of from 10 to 16 years according to type of line.

Again the life of a wooden underframe is in many cases as much as 25 years provided there is a general overhaul every 3 or 4 years and that new sills are provided at least once during this period. As for the life of a steel underframe this is indefinite but when this is contrasted with the known thirty year life of a steel sleeper under comparatively adverse conditions it can be safely placed at from 40 to 50 years with proper painting and attention. It is thus seen that as regards the most expensive elements in car construction axles and tyres are the only parts within the life period calculated previously. Who is going to argue that a car is not worth two or three axles* and as many tires in these expensive days? Again depreciation implies deterioration; there should therefore if this is taking place be some period in the life of a car at which loads be reduced or withdrawal take place. Such is not the practice prevailing at present in China. The repair process is pushed to its uttermost limits, many cars are still running after 25 years' service showing no apparent deterioration but without an asset value owing to the depreciation scale of charges prevailing. These begin from the day the car begins to run and continue at the same rate until withdrawal an initial absurdity in any case.

Again consider the case of the life of locomotive elements. The life of coupled wheel tyres is about 400,000 miles or about 13 years at 30,000 miles of running per annum. As regards the important item of fire-box life this varies very much on the nature of service heavy demand for steam and the quality of water. Generally speaking a thorough overhaul takes place every 4 to 5 years all tubes being removed and the foundation ring. It may be found that the lower half of the fire-box needs renewal and perhaps the tube plate but in many cases a tube plate will last from 8 to 9 years without renewal. Fire box crown plates last much longer as much as 15 or more years of service being recorded for many boilers. A very fair average life for a fire-box is from 8 to 4 years.

With regard to tubes these have to be withdrawn after the locomotive has run from 80,000 to 100,000 miles or say 2 years service. They are then scaled, have new ends welded on and are good for another two years' service, when they can be cut and used in shorter boilers. Thus a boiler tube may have a life of from 4 to 8 years. Super heater tubes have to have the same treatment as boiler tubes that is they need examination and attention every two years but the life of these tubes may be considered as from 8 to 10 years.

We have now considered the most vulnerable elements in a locomotive, the parts of least life. As in the case of cars these have a very small percentage to the total cost of the whole machine which has a known life of at least double that of the longest lives of the above elements.

It is thus seen that the theoretic life obtained by capitalising repair charges alone is obviously not in accordance with actual life or practice. If a depreciation charge is added to this, life becomes theoretically shorter and increasingly absurd. Further as regards the question of depreciation as indicated in repair charges there is very little evidence that repairs become increasingly heavy with age. A wagon or locomotive leaves the shops after overhaul as good as new, capable in every respect of doing the work it did when new. Why then depreciate arbitrarily until the time arrives when this is evident?

The ruling of the Chinese Railways as regards depreciation is as follows: "A monthly sum equal to one twelfth of one twenty-fifth of the cost of each unit is charged off to form a depreciation reserve, and when a unit is retired this reserve is charged with the difference

(Continued on page 508)

* Axle for 40 Tons Car \$25 only. Tire for 40 Tons Car \$ 68 only.

The Shanghai Auto Show

An Index of Reviving Business in China

POINTING to better business conditions in China generally and indicative of the gradual gain of motor transportation on this side of the world, the Shanghai Automobile Show which has just closed its doors after more than a fortnight's exhibition, extended beyond its original schedule for several days because of its popularity, the first exposition of its kind to be held here in the last five years, has been a marked success.

A total of more than 25,000 persons were attracted to the exhibit. About a score of dealers entering exhibits disposed of between 60 and 70 automobiles and motorcycles by direct public sales at the booths, several of the firms being newly formed and prosperous enterprises in China, and the exposition has stimulated the interest in automotive development in China and given impetus to the good road movement to an incalculable extent.

It was, most noticeable of all, a Chinese function. Although patronized by the leading foreign officials and business men throughout China, the bulk of those attending was Chinese. Foreign Minister Quo Tai-chi attended the inaugural of the exhibit, Mme. Quo Tai-chi officially opening the display on October 28 by cutting the silken band stretched between the arches at the foot of the Eiffel tower which adorned the entrance. Dr. Hu Shih, the leading Chinese scholar and exponent of a motorcar civilization as the first step in the regeneration of China, also was among those who were attracted to the first night of the exposition.

Crowds of Chinese, their curiosity aroused by the brilliant lights and gorgeous decorations of the exhibit, were being given an education in the wonders of modern motors. They were impressed by the non-stop run of one engine, a Rugby car, which was kept going night and day during the entire exhibit to prove the non-heating qualities of the motor. They were impressed by the advances made in the gasoline "fire-wagons" as evidenced by the comparison, side by side, of a motorcycle manufactured in China twenty years ago by a Chinese and one of the imported 1927 models. The fact that Chinese had engaged in the building of motors at this early age hitherto was not even known by the foreigners.

Essentially a mechanically minded race, as Mr. Sokolsky pointed out in a previous issue, the Chinese who visited the Shanghai show, many of them coming from points in the interior, absorbed much from what they saw during those fourteen days; it is as an educational force, rather than as an index of reviving business, in China, that the exhibit is to be remembered. Already, through the introduction of bus lines, we had Chinese even those of the coolie class, using tokens instead of money for transportation; now they are reading pamphlets in their own language elucidating the mysteries of the gasoline engine and telling of the possibilities for the uses of motorcars.

It is five years since the last auto show was held in Shanghai, a highly successful venture, and perhaps conducted on an even wider scale; yet considering the improvements made in cars since then, as also the general depression of business in China during the previous eight months, this year's show has been an even greater success. For during these last five years, we have seen many more roads built in China, and many more Chinese owning their own cars, outnumbering the foreigners by a big ratio, and practically every car in China is driven by Chinese and looked after by native mechanics. Schools conducted for chauffeurs and expert repairmen enjoy a wide patronage, and while Shanghai has developed an "auto row" such as any large city in America might boast, there are in addition garages on nearly every corner.

Tilted up on jacks at one end, a huge Packard limousine was one of the chief attractions of the auto show. On the floor underneath, Mr. Mark L. Moody, the exhibitor, had ingeniously devised a mirror. There was a crowd of visitors clustered about this odd exhibit during most of the exposition, for in the mirror could be seen all the "insides" of the motor, even when it was running. This effective demonstration created the desired impression upon hundreds. There were other parts of the exhibit of equal novelty and attraction which could not but imprint an intimate knowledge of the motor on those who visited the array of exhibits.

Besides the Rugby, and the Packard and Chrysler exhibits there were booths devoted to Airlands, Ltd., motorcycles, Peugeot, Chevrolet, Renault, Essex, and



Night View of the Auto Show Tower

Nash cars, Harley-Davidson, Indian, B.S.A. and Royal Enfield motorcycles. To round out the exhibit and make up for the vacancies left by possible automobile exhibitors who were unwilling to join, there were other booths filled with miscellaneous displays, such as office appliances, arts and crafts, Kodak, S.K.F. ball-bearing, and one or two fashions establishments.

There is another angle to the exhibit unmentioned in any other report, but one which has a vital bearing upon the development of automotive transportation in China, and that is the element of understanding and co-operation among the various dealers. The exposition helped to bring most of the important distributors together. There are still several who have displayed a marked unwillingness to co-operate with their fellow-tradesmen, petty jealousies always having interfered with the successful formation of an association of all dealers which could do much to help bring a gasoline civilization to China.

The outstanding dealers, such as Mr. Moody and Mr. Leon Friedman of China Motors, always have advocated such an association as working for the promotion of all interested in the trade. Jointly these dealers could stimulate the good road movement, help in the education of the Chinese public, work against a taxation that would impede the natural influx of motorcars and in every way help to boom the



The Rugby Car Given Away at the Shanghai Auto Show

trade. Bigger and better motorcar exhibits on a scale hitherto deemed impossible could be promoted; the China Automobile Association revived to function on a plane with the extremely active and powerful automobile clubs in America and England; the interest both of all the dealers and the motoring public, just emerging into an entity, could be protected. It will be a long time before China can produce its own cars, a century at least, to compete successfully with the mass production of the West, and the dealers in foreign cars have a clear field before them, if they should choose to take the obvious steps in accelerating the development of the automobile in China.

If the recent exposition, promoted by relatively an outsider Mr. H. Crawshaw, of the Acme Advertising Agency, and run on the lines of an amusement resort, could be made such an outstanding success, eclipsing in attendance at least the auto show of five years ago, what could be accomplished by a more authentic automotive display having the backing of an association of dealers? And what more could be done through other educational channels to bring the motorcar into the heart of China, to convert walls into highways, isolated primitive villages into thriving prosperity, transmute the coolie into a workman, and advance the whole level of civilization in China?

New Chinchow-Pitzuwo Railway

On October 4 the new railway from Chinchow to Pitzuwo (South Manchuria) was formally opened. The length is given at 63 miles, and the construction cost at Yen 3,700,000. The line was built by a private Sino-Japanese Company, Mr. S. Hori being Managing Director as well as vice-President. There are 11 stations on the railway, which runs through fertile country.

Electrical Developments in Japan

It is understood that the Tokyo Dento K.K. has decided to extend its Senju power station to a capacity of 75,000 kw. by the end of 1928.

The Korean Hydro-Electric Co. has decided to buy generators from the Siemens and water turbines from the Voigt companies for its first power station. The water turbines will be of 32,000 kw.

It is reported that the railway authorities have decided to commence the construction of the Shinano-Gawa hydro-electric power stations this fiscal year, for which land will be purchased and a light railway will be built.

Foochow Motor Bus Service Co.

The Foochow Motor Bus Company was organised in 1918 with a capital of \$154,800, of which \$48,900 were Government shares and the remaining \$105,900, private shares. The company had an ambitious program, which included the building of motor roads to Shuikow and Yenping two riverine ports on the Min River, about 200 li and 400 li from Foochow respectively. But, up to the present, the roads so far built have not got further than the city suburbs. Four have been completed: (1) West Gate to Hungshankiao, (2) South Gate to Makow (3) South Gate to Taikiangsing, (4) Shuipu to Tai kiangsin. A regular motor bus service is now operated only on the South Gate-Taikiangsing road. The company has been losing heavily and has no money to build roads or extend its business.

In May this year Fukien authorities had the company "provincialised" without giving any compensation to the private shareholders, notwithstanding the protest of the latter. The staff has also been reduced, with their food allowance cut off entirely. Although only one road has been opened to traffic, the service is well-patronised by reason of the high fare charged by the ricscha puller. The company charges each passenger 10 cents for a trip from the South Gate to Taikiangsing or *vice versa*. Between these two places there are two intermediary stations at Yangtouwou and the South Park, the fare from the South Gate to these two places being 9 coppers and 13 coppers respectively. For private parties, the hire of an ordinary touring car is \$2 an hour. The service operates from half past seven in the morning till late in the night. Each bus departs from the South Gate at a regular interval of 10 minutes. The company at present has about half a dozen motor vehicles of various descriptions. Its average daily gross receipts are about \$100.

Kiaochow-Tsinan Railway

The following table, from an unofficial report, shows the gross receipts of the Kiaochow-Tsinan Railway under Chinese administration during the past three years, the figures being approximate:

Year	No. of Passengers	Passenger	Goods	Freightage
	Transported	Fares	Transported	
1924	3,990,000	\$2,670,000	2,200,000 tons	\$7,200,000
1925	3,650,000	\$2,500,000	2,000,000 "	\$6,540,000
1926	3,420,000	\$2,800,000	1,660,000 "	\$5,060,000

When the railway was under German administration in 1913 the number of passengers transported was 1,327,000 and goods 946,000 tons, the total receipts for the year being \$4,130,000; and under Japanese administration in 1915 the number of passengers transported was 1,117,000 and goods 874,000 tons, yielding a total income of \$3,650,000. This shows substantial increase in the Railway's business after the retrocession. The recent civil war has had a decided effect upon both passenger and freight traffic as is shown by the figures for the last two years.

By O. J. Todd







Leaving Peking in early October, I took the sea route to Hong-kong and Haifong, then by rail to Hanoi and north to Yunnanfu, completing the section of my journey in three weeks, one week of

In Hongkong, where millions have been spent in making this rocky island a comfortable and attractive place in which to live, perhaps the engineers' contribution is most evident in the transportation system—the cable operated Peak Railway, the scenic motor road around the island, and the miles of first class paved streets and walks. Kowloon, on the mainland ten minutes by ferry from Hongkong, now rivals the older city as a desirable residential center with many miles of first class paved streets and a most up-to-date

* "The Oriental Engineer," May 1927

DISTRICTS

	EAST RIVER DISTRICT HIGHWAY OFFICE
	SOUTHERN TERRITORIES HIGHWAY OFFICE
	WESTERN TERRITORIES HIGHWAY OFFICE
	NORTHERN TERRITORIES HIGHWAY OFFICE

DISTRICTS	
	EAST RIVER DISTRICT HIGHWAY OFFICE
	SOUTHERN TERRITORIES HIGHWAY OFFICE
	WESTERN TERRITORIES HIGHWAY OFFICE
	NORTHERN TERRITORIES HIGHWAY OFFICE
	HAINAN HIGHWAY OFFICE
	MAIN CONTROLLING OFFICE

PROPOSED PROVINCIAL HIGHWAY	PROPOSED DISTRICT HIGHWAY
HIGHWAYS COMPLETED	HIGHWAYS UNDER CONSTRUCTION
HIGHWAYS WITH MOTOR CAR SERVICE	

urban and suburban motorbus and taxi system. It has boulevards including a sixty mile motor road through the hills and along the shores of the bay. This is a most modern macadamized road as carefully designed and built as the best mountain motor roads of the Pacific Coast in America. It is without an equal as a pleasure drive in China. Macao, too, has its well laid out paved streets over which motor driving is a popular recreation. Here the work is older but substantially done. As in Hongkong and Kowloon it is a part of the port development under foreign administration.

In Canton, however, one sees more progress, for here the modern road has invaded the stronghold of an old Chinese city of narrow and crooked streets. It is only in very recent years that broad, well paved streets with good alignment have been known in this great city. Knowing the conservatism of old Canton one marvels at the strides that have been made in rebuilding the city on modern lines. With the Chief Engineer of the Canton-Hankow Railway we motored over miles of these new macadam roads and out beyond the business district to the residential parts where a new motor road leads to the site of Canton's future port—Whampoa. This suburban road had just been completed under the direction of our escort, Mr. Yee, who had previously served an apprenticeship with the Michigan State Highways Commission after graduation from the State University.

Western Transport

The railroads, too, were being rapidly put in order after some disruption incident to civil war the preceeding year. I was later informed that by January all three railways out of Canton were running full train schedules on time, with satisfactory service to the general public. The railway from Kowloon to Canton is a fine piece of modern engineering and the service as I found it in late January was first class. The trains were making the trip on schedule time—less than four and a half hours for the run.

Comfortable steamboats were found running from Hongkong to Canton, Macao, and Wuchow (up the West River). So this coast district around Canton and Hongkong reflected most unmistakably the effects of western engineering practice in transportation to say nothing of other lines including modern water supply, city lighting etc.

Reaching Yunnanfu in late October, I was confronted with a situation quite in contrast to the Canton area. Here we were at the "jumping-off place." The narrow gauge railway from Indo-China through southern Yunnan had made ingress to the capital easy and fairly comfortable. This railway taps the great Yunnanfu plain or plateau lying over 6,000 feet above sea level—a rich agricultural center to which much of the wealth of the province gravitates. But Yunnan Province is a vast territory with high mountains from border to border and almost without roads, except those over which men on foot and mules may travel. Cart roads are local, short and poorly maintained. It is an undeveloped country from the engineer's viewpoint.

Famine Roads

My assistant, Mr. Pond, a Kwangtung man with several years road building experience in America, preceded me in Yunnan four months and was able to assist me greatly in making appraisals of men and things as we found them in this far corner of China. As a result of preliminary investigations it was decided to undertake in this province a road building pro-

gramme using the available \$300,000 to start the "good roads" movement as a means to prevent future famines. With the approval of the Yunnanfu officials this programme was adopted and we decided to build east and north from the capital as far as our funds would permit.

In October and early November we went into the question of location and type of road after considerable field study and it then seemed wisest to build a well graded earth motor road with 7 per cent. maximum grades starting near the railway station in Yunnanfu continuing out the main paved south street to the east. The old stone road to the east of the city needs widening and straightening, making the new road twenty-five feet wide.

Old Carts

Due to the use of very crude country carts in this region these vehicles will either be routed over other roads or restricted to an eight foot path on one side of the new road. The solid wooden wheels of these vehicles soon become irregular by bouncing over the rough stone pavements and with their rough edges tear up the earth roads in damp weather. There is a fine opportunity here to introduce a new type of wide tired wheels preferably made of steel. They could be used with little damage to the new motor roads.

The topography of the country north-east of Yunnanfu toward Yanglin and beyond to the north is favorable for road construction. There is no difficulty here in getting good grades with a fairly straight alignment. The soil is mostly red or yellow clay with but little sand. In wet weather it is nearly as sticky as the clay of Hunan or Kweichow, but with sun and wind dries rapidly. Fortunately for road maintenance there is a great deal more sunshine in this Yunnanfu region than in the provinces of Kweichow or Szechuan. Also there is little brush and few shade trees to hold dampness. This makes an earth road more possible than in Hunan, Kweichow or Szechuan.

The matter of paving this Yunnan road is one to be considered later. Eventually a macadam surface at least twenty feet wide and a foot thick in the middle should be placed on all of this road bed. As an earth road it will probably not be usable for more than 60 per cent. of the year. But stone is not readily at hand near Yunnanfu as in the more mountainous districts along the eastern or northern border to the province. Its cost will be rather high compared with the earthwork, but the Province, or the city of Yunnanfu, can and will eventually raise the funds to pay for such surfacing.

Road Benefits

The benefits to be derived from these motor roads are incalculable at the present time for the resources of Yunnan have never been properly developed. From a famine prevention standpoint there

is every reason for improving travel facilities for approach to the capital. The bringing in of hides, wood oil, silk, etc., on ponies from remote points, (days travel distant, is an extravagance that keeps the country in its state of obscurity. Rice or wheat seldom are carried far due to the great cost of transport whether on the backs of men or animals. It averages from 35 cents to 50 cents per ton-mile over the mountain paths where no carts can go. The radius of productive grain transport is therefore small indeed. In time of drought, famine cannot be avoided except in very sparsely populated districts. Good



Another Broad Avenue in the New Canton

communication, then, will prove the first great help in solving the food problem in this province. It was after coming to this conclusion that the Famine Commission decided to put all its funds in the building of standard roads for motor traffic.

Native Bridges

The last week of November and the entire month of December were spent in the province of Kweichow walking over stone paved paths where carts have never been known. We entered the province between Lo P'ing and Hwangtsopa in the south-western corner of Kweichow after crossing a fine stone bridge over a turbulent mountain stream that goes to feed the main north branch of the West River. In bridge building these natives are skillful. The center arch of this bridge is seventy feet across, the two other arches being each thirty-five feet. The structure is substantial and artistic. Other bridges made from the local limestone rock show a skill in this line of work equal to anything of the kind found elsewhere in China. Several of these were crossed on the long road leading north-east to Kweiyang, the capital. Nearly all of this long road is stone paved and from three to ten feet in width depending on its location with respect to large towns. Due to the frequency of rains travel is extremely difficult over the clay for a great portion of the year. Men, who carry most of the loads here, must have good footing in order to make any progress in handling freight or carrying mountain chairs.

Roads Needed

Kweichow needs motor roads as does no other province in the country. It is very mountainous country with no navigable streams worth mentioning. Only at the northern border are there feeders to the Yangtze that can be used by medium sized craft. Good roads are the only means of developing the country and making it accessible to the outside world. Railways are needed but will not come for a few years. Motor roads are possible now. Trunk lines should be built from Kweiyang to the north, the east and the south-east, and later to the west to Yunnanfu. The most important of these main roads seems to be the one to the north. It is on this work that the Governor of Kweichow, Tsao Chi-tsun, has concentrated his efforts and enlisted the support of the Famine Relief Commission.

Reaching Kweiyang the last day of November, I was surprised to find the activity that existed there in road building. Over a thousand soldiers as well as famine refugees were at work on a good thirty foot motor road around the city. This loop will be about thirty *li* in length. Early in December the Governor had organized students of both sexes for this work and they were going at the new task in good humor. It was planned to have the boys work one week and the girls the next having class work in the schools the alternate weeks. This plan includes all able bodied students over fourteen years of age taking men from the law school and girls from the normal. Even though the days they worked were short compared with hardened coolies, a right beginning had been made.

Projected Road

A two weeks inspection trip was made north from Kweiyang to Tungtze near the Szechuan border. From this city the main road will run west and a little north to meet a branch of the Yangtze at Chihshui from where motor launches can carry goods and passengers to Chungking. Altogether this road will be about 400 miles (1,200 *li*) in length. Its cost is estimated at approximately \$2,500,000. The grades are to be 7 per cent. maximum except for very short stretches where 8 per cent. may be used. Limestone is plentiful everywhere so that the middle twenty feet will be macadamized. It is planned to make the grade thirty feet wide over all allowing five feet on the hillside for drainage. There will be one rather bad river crossing at the Wu Chang Ho but here the engineering problems are not extremely difficult.

Low Cost

With the local labor reasonable in price, and the plan of the Governor to use soldiers for the greater part of this work, it seems likely that this road can be built for about \$6,000 per mile (\$2,000 per *li*). The one large bridge will cost upward of \$100,000. For

the first year or two a ferry system will be employed at that point. Smaller bridges will be of local stone built at a low cost. Everywhere the counties or hsien will assist by a local labor road tax or assessment. Each village will be given a certain stretch of road to build on the same plan used in Kwangsi to the south.

The Famine Commission is proceeding with this work using first all the poorer people that care to come to the project. Then farmers will be employed to recruit up to about 2,000 men. Mr. W. T. Wong, an American trained engineer, has already been sent in with an engineering party to locate and supervise construction of this trunk line under direction of the Famine Commission working with the Governor. It is a two year undertaking with things running as planned. Political upheaval in the province would delay the work. At present, however, peaceful conditions prevail there and the province is particularly free from bandits. There also appears to be a united spirit on the part of all classes to support the Governor in his endeavor to open up the province. Those who went through the typhus epidemic of less than two years ago near Tsunyi, and those who are interested in a fairly rapid mail service, as well as merchants, missionaries and officials all are working toward the same end.

New Life

With this first trunk line of motor road completed, Kweichow will become more a part of commercial China than she has seemed heretofore. She will also become better known as a health resort for those who need to get up into the mountains. Her mineral wealth will be developed, for she has coal in abundance and iron, beside many other metals. Then the line to the south-east will become most a necessity in order to get in foreign made goods at a low price. That road will strike the Kwangsi border near Lipo and go on to Liuchowfu and on down the West River to Wochow. Kwangsi is now doing her share in road building under most able management and the rivalry may well continue for some time until motors may run from Canton through Kweiyang to the Yangtze.

Proper Spirit

Roads to the east and west from Kweichow's capital will follow in few years—perhaps within the next two years. They are costly and require man power in which this province is not oversupplied. The movement has been started, however, and will be given every encouragement by the Famine Commission as well as local officials. It is the plan of the writer to again go into the province this fall to assist further in this work that appears now much more feasible than it did a year ago before a careful investigation had been made of the conditions. The most hopeful sign of all was the intense enthusiasm of the Governor of the province and the loyal support he seemed to be given by the people generally. We need more of this spirit that permits united effort in making it possible to construct public utilities where the whole community will benefit. In Kweichow and Kwangsi this spirit is very evident. Yunnan, though less enthusiastic will follow.

Kirin-Hailungcheng Line.—The earthwork on the first section of the new Kirin-Hailungcheng Line between Lienhuapao and Sikuan (West Gate), Kirin, is nearing completion, and in less than a month, will be ready for running construction trains.

Hailin to Tunhua Project.—The gentry of Ninguta, North Manchuria, who are planning to build a new railway between Ninguta and Hailin on the C. E. R. Eastern Section, propose to extend the projected line south to Tunhua, the terminus of the Kirin-Tunhua Line.

Sansing-Imienpo Railway.—The Chinese Eastern Railway Administration's plan to build a branch from Imienpo on the C. E. R. to Sansing has been sanctioned by the Peking Government. Surveying work on the new line will soon be started and will be completed before the end of this year. Construction is to begin next spring when the ice melts.

Relative Economic Interests of Japan and America in the Far East

Address By Mr. Kiyoshi Uchiyama Consul of Japan

IT is only 76 years ago that Japan was awakened by America from her long isolation of 25 centuries. The friendship which has prevailed between our countries as a result of this awakening has been an essential factor in establishing the cordial understanding that now characterizes our relations. I am rather of the opinion that closer economic and commercial relations in the future are far more necessary for the consolidation of this mutual regard, as it is only in the field of commerce and finance that nations come fully to understand each other's needs and to respect their viewpoints. In attempting to explain to you how intimate our commercial relations have already become, I would like to outline a brief sketch of the present economic relations between Japan and America.

The latest American commercial report for the year ending last December gives the total import and export trade of this country as nine billion two hundred million dollars. Of this, Japan's share was 661 million dollars. Your trade with the United Kingdom and Canada naturally comes first in the list, and Japan comes third followed by Germany, France and Cuba. Your trade statistics show that Japan is America's best customer in Asia. Not only is this true on her own account, but an analysis of the reports will also convince you that Japan's activities are responsible for a large share of your trade with other Asiatic countries.

When thinking about American trade with Japan, your mind immediately turns to silk. Your purchases of silk alone accounts for ten per cent. of your total imports. America's total imports from Japan amounts in value to about 400 million dollars. Raw silk and silk goods form 85 per cent. of this total and with tea and chinaware make up 90 per cent. of the volume.

Sometime ago, I was talking with an American friend about the present styles in feminine wearing apparel and suggested jokingly that if the American ladies would return to their grand-mother's conception of modesty in dress and frown down on short skirts, if only to wear them two or three inches longer, how much our business men would applaud the change. I am not at all conservative or prudish, but from mere patriotic enthusiasm I would like to see your wives and daughters become more Victorian in their ideas of dress and wear a heavier quality of silk, or if they refuse to do this, as they assuredly would, will you please be good enough to become more luxurious in your wearing apparel and use more silk clothing yourselves.

■ The Japanese would also be delighted if you acquired the European taste for tea and would make the English "Five-o'clock" ceremonial a popular institution in this country, especially, if you would drink more "green tea"

and serve it in Japanese porcelain tea sets. The more silk clothes you wear and the more green tea you drink served in Japanese cups and saucers, the more you will assist Japan in working out her economic problems.

What products are you exporting to Japan? Here, as you will see from a reference to your trade statistics, raw cotton heads the list, amounting in value from 100 to 120 million dollars, or nearly half your total exports of this staple. After cotton, your main exports to Japan are iron, steel, lumber, petroleum, oils, machinery, automobiles, vehicles and leaf tobacco. Now what is Japan doing with this enormous amount of American raw cotton? This you will more readily understand by a glance at Japan's foreign trade figures, in which the United States occupies first place and China second. Japan's total trade with China at the end of last year amounted to nearly \$460,000,000 of which \$260,000,000 represents exports, or about the same as our imports from your country.

Next to silk Japan's main source of industrial wealth is derived from the manufacture of cotton yarn and piece goods from the raw material purchased in America and other producing countries. We find a market for these manufactured products mainly in China, India, the South Sea Islands and Africa. Raw cotton makes up 31 per cent. of our total imports and manufactured cotton goods about 24 per cent. of our total exports. The export of silk and cotton goods from Japan amounts to nearly 70 per cent. of our total ex-

portations. In other words, Japan's economic life is based on its exports of silk, tea, china ware and other merchandise to America in order to pay for our imports of raw cotton and other essential materials for the maintenance of our industry. We manufacture the raw cotton into yarns and piece goods with machinery and engineering accessories also purchased largely in America, and sell our products in markets where the higher grade American piece goods do not enter into competition. In return for these exports to other Asiatic countries they supply us with our heavy requirements of food supplies, fertilizers and materials essential to our continued economic existence. Owing to our lack of raw materials and a restricted area of arable land for a rapidly increasing population, Japan merely ekes out a hand-to-mouth existence through the employment of her labor. Japan is existing and maintaining her place in the economic world on a meagre commission or profit derived from transforming raw materials into low-grade finished products through her command of a relatively cheaper labor than Western nations and her trading experience with other Asiatic peoples.

Japan is one of the best markets for American steel and steel products. Since the war



Reeling Silk in Japan



A Japanese Silk Filature

they would have to be transferred to China to operate economically and profitably. In this connection, it must be borne in mind that the bulk of the raw material for these industries is imported into Japan from China and the finished product re-exported to China. If these industries are to survive under a higher Chinese customs tariff, it goes without saying that they will have to be transferred to the country which furnishes the raw materials and the ultimate consumer.

The removal of our low-grade industries to China will inevitably entail heavy losses upon our capitalists until such time as we have adjusted ourselves to the changed conditions. Fortunately, we have already anticipated this situation by erecting cotton mills, sugar refineries, match factories, flour mills and other enterprises in China and while we are passing through the transitory stage, our major home industries are being re-equipped for the manufacture of a higher grade of goods. Only in this manner can Japan hope to survive in her present struggle and solve her basic population problem. If our low-grade industries become unprofitable, our capital must be invested in manufacturing a higher grade of products, which, in turn, calls for more expert labor, the installation of precision tools, automatic machinery, and all the other engineering accessories and up-to-date appliances essential to success. In the matter of cotton goods, our Chinese mills will take over the manufacture of the cheaper and coarser grades while our home installations will be remodelled to produce the finer and more expensive grades. This, in itself, will call for large expenditures for new automatic spinning and weaving machinery and an increased consumption of the long staple American and Egyptian cotton. American farmers and manufacturers of machinery will benefit from this radical transformation in our industrial life.

Japan's industrial readjustment will not endanger America's Far Eastern trade. We do not compete with you in any of your major or basic industries, nor can we at any time in the future wrest from you the supremacy in these lines. This new orientation of Japanese

(Continued on page 506).

we have taken 25 per cent. of your major steel exports. Our purchases have, therefore, contributed very largely to the prosperity of your basic industry.

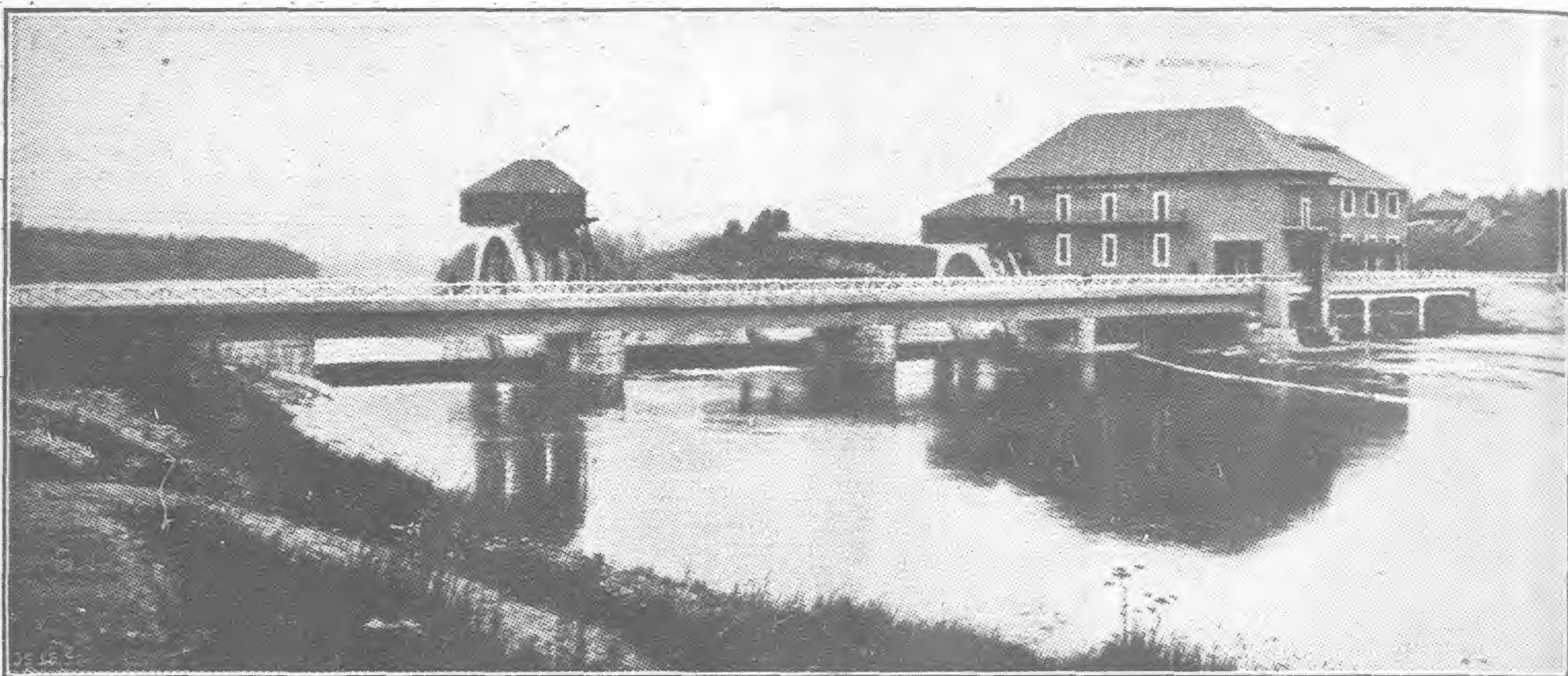
From the above rough outline of facts you will gather that Japan's economic existence depends to a large extent upon the most friendly and cordial relations with your country, and you will also see that due to the difference in industrial conditions, under no possible circumstances can there be any great commercial conflict or competition between us in the development of other Far Eastern markets. American products, which are finding such an increasing demand in China, and other parts of Asia, cannot be manufactured economically in Japan.

For instance, America's chief exports to China are as follows: milk and cream, dried fruits and nuts, raw cotton, lumber, petroleum and its by-products, iron and steel, machinery, copper, vehicles, photographic materials, leaf tobacco, etc. It will interest you to learn that a considerable proportion of these goods exported to China are consumed by Japanese industries and enterprises in that country. Japanese capital owns over 40 per cent. of the total cotton mill spindlage in China and we also operate sugar refineries, tobacco and match factories, mines, shipyards, steamship, railways and other industrial undertakings in that country. It is fair to state that from 30 to 40 per cent. of American exports to China are purchased in this country by Japanese firms for the account of Japanese enterprises in China. In Manchuria alone, our purchases of American railway material and industrial machinery have been enormous.

This remarkable feature of America's trade with China will tend steadily to increase rather than diminish. In compliance with the provisions of the Washington treaties for the revision of China's import tariff, Japan must sooner or later readjust herself to the changed economic conditions. With any substantial increase in China's import tariff, many Japanese industries would be seriously handicapped, as with the lower wages prevalent in China, added to the transportation charges, the low-grade industries of Japan would be so crippled that in order to compete and survive



Improved Loom for Silk Weaving



Modern Hydro-Electric Power Station—Dam from Up Stream Side

The Perak River Hydro-Electric Power Company, Limited

PROBABLY no area in the world having the industry and wealth of the State of Perak is so out of date in its power arrangements, and considering the vital importance of a cheap and adequate electricity supply to a country's prosperity the Scheme now being carried out by the Perak River Hydro-Electric Power Company is one of this generation's most important contributions to Perak's prosperity.

The Company is controlled by a Board of Directors in London and it is no secret that the Federal Government has invested a considerable sum in this venture and is sufficiently far sighted and progressive to render the Company such assistance as is necessary to make the Scheme of the fullest benefit to the State.

Although the Concession granted to the Company by the Government is considerable, the obligations of the Company are very heavy and to fulfil these obligations in a satisfactory and efficient manner the Company is spending a sum of over three million pounds sterling in the development of the Scheme, which will be an asset to the State of Perak and which must eventually enhance the amenities of every village and township within reach of the scheme.

Sufficient has already been said to indicate the financial strength of the concern responsible for the inauguration and working of this Scheme, and our readers will be interested in the following official details of this project.

The area of the Company's Concession includes :—

The District of Kuala Kangsar together with the Mukims of Durien Pipit, Temelong and Leng-gong, in the District of Upper Perak.

The District of Kinta.

The Mukims of Chenderiang,

Batang Padang and Bidor, in the Batang Padang District.

The Mukims of Pulau Tiga, Kampong Gajah and Panjang Ulu, in the Lower Perak District.

At the present time two generating stations are being constructed to afford a supply of electricity in this area, and further additions will be made should future development make such additions necessary.

The main station is a large Hydro-Electric Station at Chenderoh situated on the Perak River 13 miles north of Kuala Kangsar. Some 1,000 coolies have been working for some time in preparing and levelling this site, in constructing workshops and staff quarters: the construction of the coffer dams required before work on the main dam is commenced has already been taken in hand.

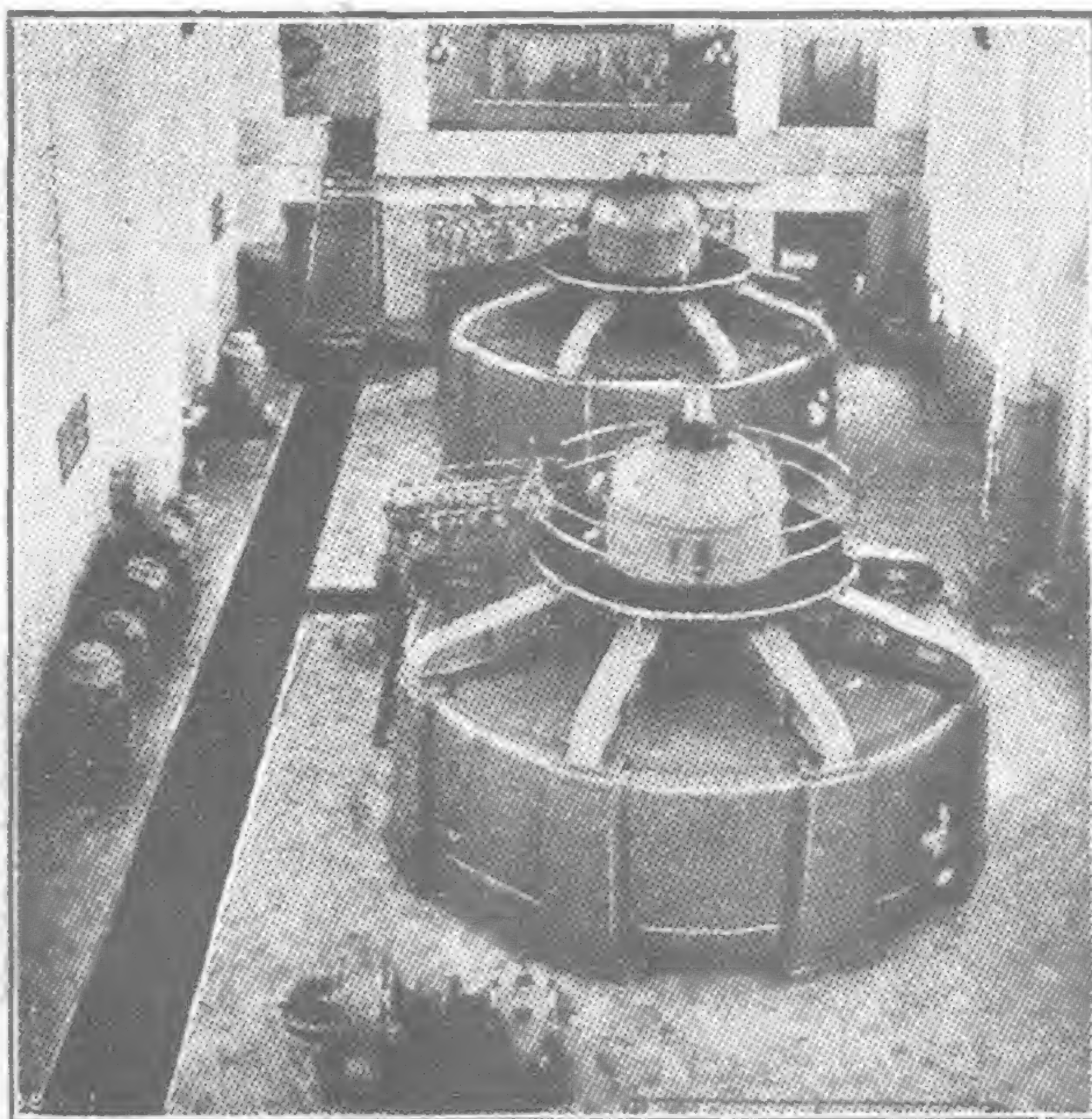
We are able to give a photograph taken a few days ago which shows the position of the main dam and the site of the power Station. This dam with boat-way and log-sluice will be 640 feet in length and its special construction will ensure thorough stability while the features for using and controlling the water at all levels have been carefully thought out.

To give our readers an idea of a modern Hydro-Electric Power Station, we illustrate a station at Forshuvd-forsen, Sweden, the illustration being taken from "Engineering."

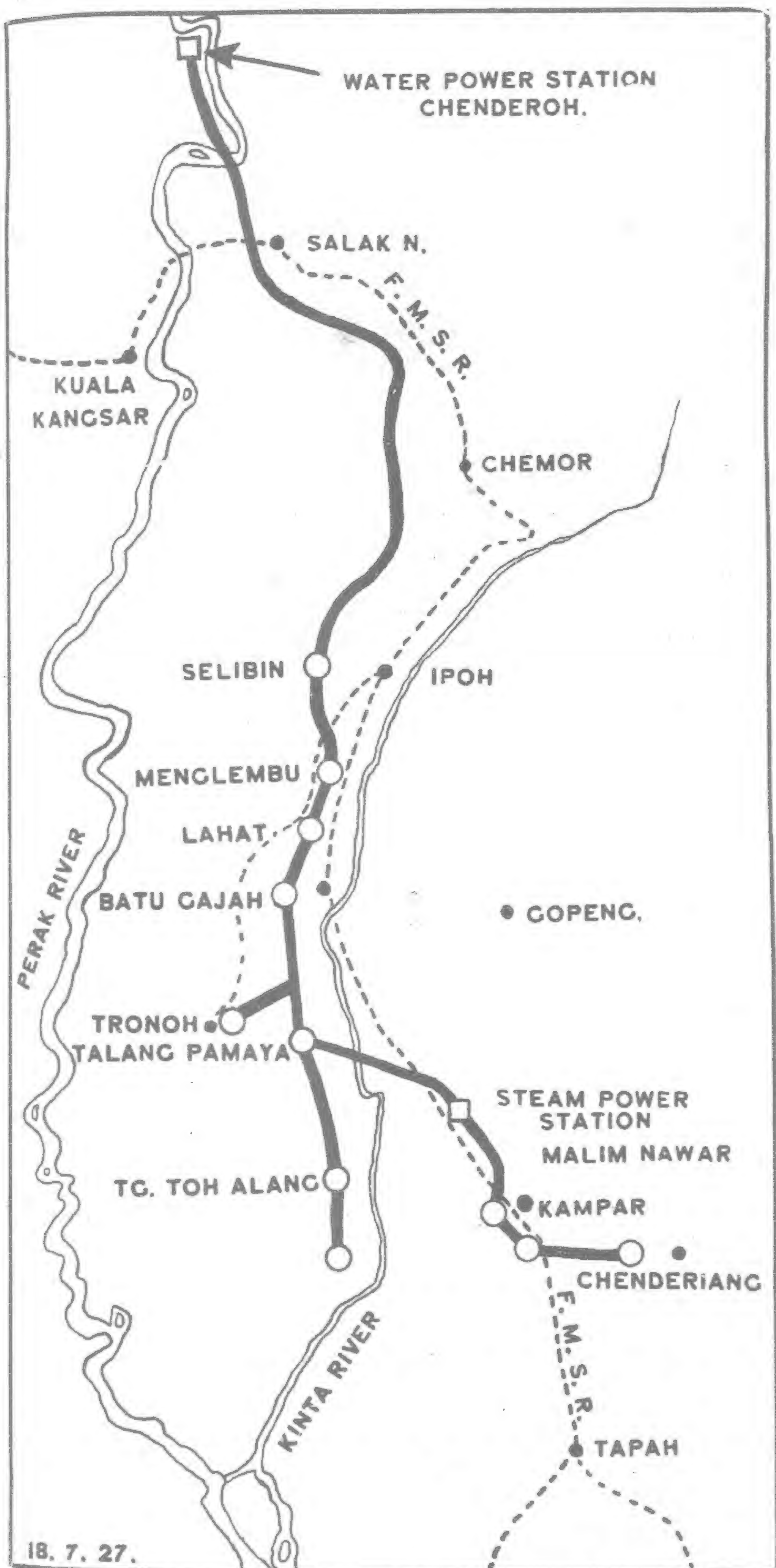
The contract for the Chenderoh Dam has been given to Messrs. Topham, Jones & Railton Limited the well known contractors, who have constructed large undertakings in various parts of the world.

The Power Station is designed for an installation of 3 Water Turbines with direct coupled Generators mounted on Vertical Shafts and each unit has an output of 9,000 k.w.

The turbines are of the vertical type and are being manufactured by



Hydro-Electric Generators



Map Showing Approximate Position of Transmission Lines and Site of Main Sub-stations in the First Area of Supply. From These Main Sub-stations 6,600 Volt Service Lines will be Run to the Consumers' Sub-stations Located in the Surrounding Districts.

Messrs. Armstrong, Whitworth & Company at their Open-shaw Works, Manchester, and will each give 12,000 b.h.p. at the normal low water head of 60 feet. These turbines will run at a speed of 94 r.m.p. and each will be direct coupled to 3 phase alternators which are being manufactured at Stafford by the English Electric Company, Limited.

These alternators are capable of giving on continuous overload 10,800 k.w. at 5,600 volts and 875 power factor. The machines have the following remarkable efficiencies at unity power factor :—

Load	120%	100%	75%	50%
Effcy.	97.1%	97.05%	96.8%	96%

Such efficiencies, rarely equalled, are obtained by excellency in design, material and workmanship. The generators have 32 pairs of poles and furnish energy at a frequency of 50 cycles per second. The stators are "Star" connected and the machines are specially fan-cooled. The switchgear controlling this supply is being manufactured in Manchester by the Metropolitan Vickers Electrical Company, Limited, and a fuller description of this switchgear is given elsewhere in this issue.

This Hydro-Electric Power Station will be completed in under 2½ year's time: the second generating station is being constructed at Malim Nawar. This is a Steam Driven Station and will be in commercial operation in August, 1928, thus enabling the Company to give an early supply in the southern part of its area, and after the setting to work of the Hydro-electric Station at Chenderoh the Steam Station will act as an efficient standby to the Chenderoh Station, ensuring continuity of supply in the area, should the output of the Chenderoh Station be curtailed in any way owing to serious variation in the water supply.

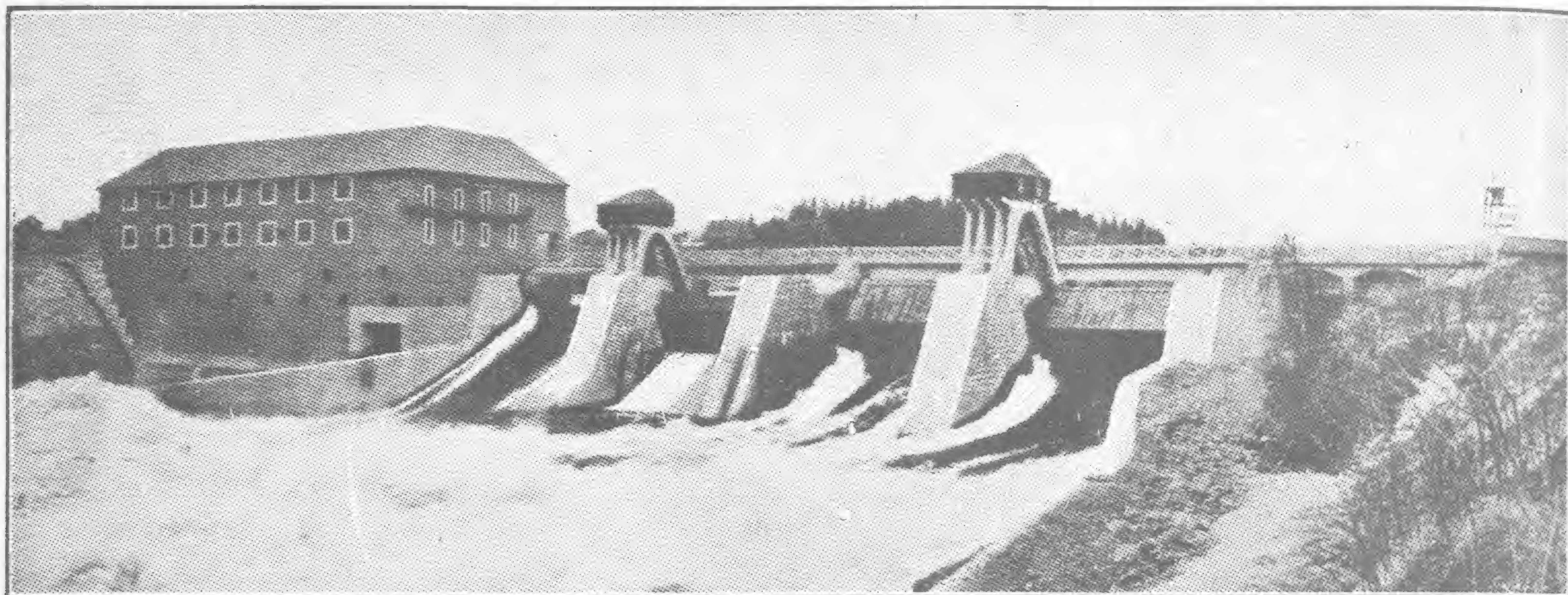
Interest is focussed on the Steam Station at the moment as from this station the first supply will be given.

Space does not permit us to give an adequate description of this interesting station containing many novel features and it is proposed to give a detailed account in a future electrical issue. Sufficient for the present is the fact that at the commencement of supply two turbine driven alternators each rated at 6,000 k.w. will be running.

Dealing with the transmission and distribution of power; energy in the first place will be generated at 6,600 volts and transformed by means of step up transformers to 66,000 volts at which pressure it can be economically transmitted over the 60 miles of country separating the two Generating Stations. This main transmission line will be in duplicate and will pass through the main sub-stations located in the most intensive industrial areas.

The main sub-stations will contain transformers for reducing the pressure of 66,000 volts to 22,000 volts at which voltage energy will be transmitted to secondary sub-stations located nearer to the site of consumers' mines. Transformers in these secondary sub-stations will again transform the energy from 22,000 volts to 6,600 volts at which pressure supply will be given to consumers in the various mining areas.

An interesting feature in the sub-station switchgear. It will be generally understood that faults on transmission lines are more likely to occur on the 6,600 volt lines taken across mining land to pumps and dredges than to the more permanent main transmission lines. The



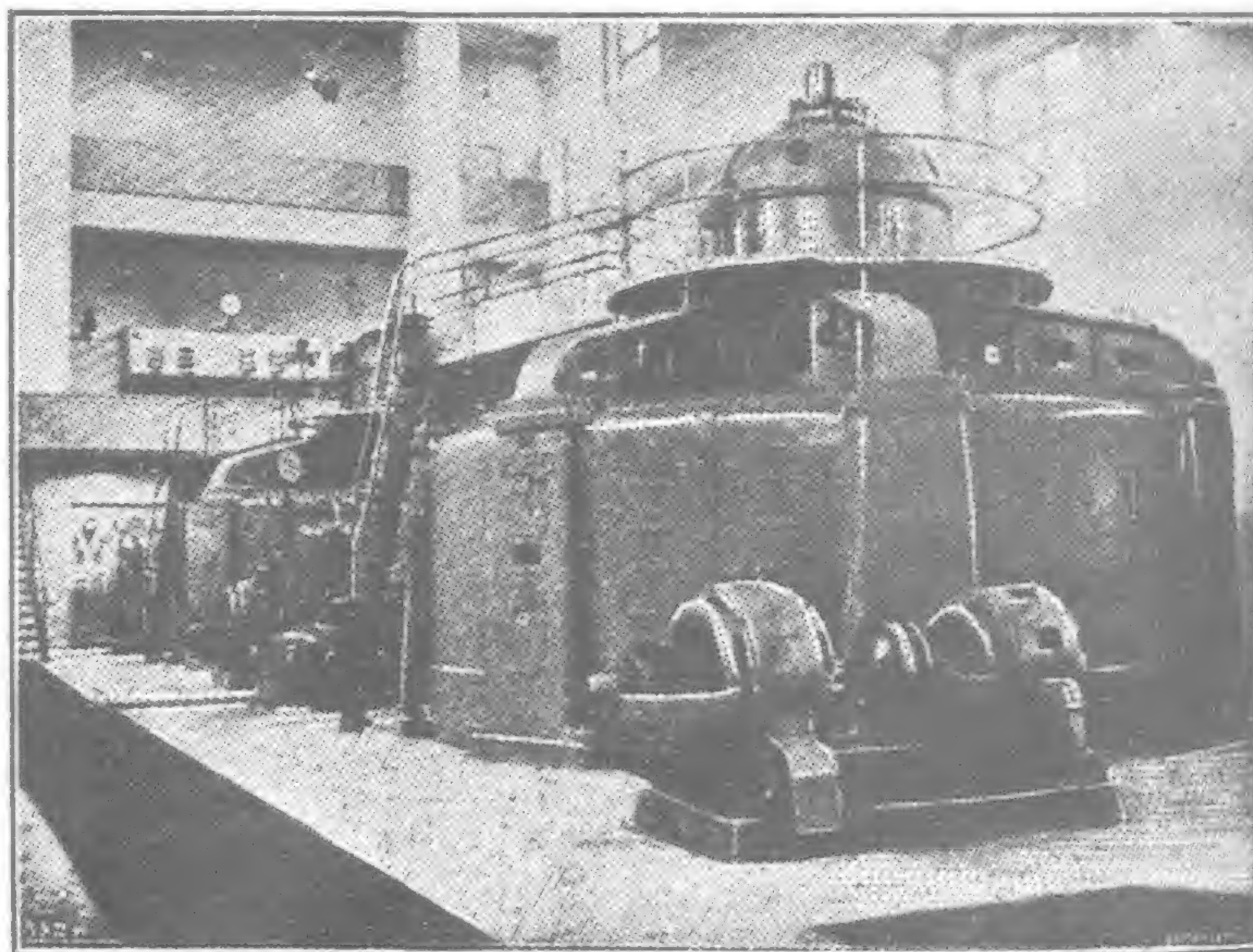
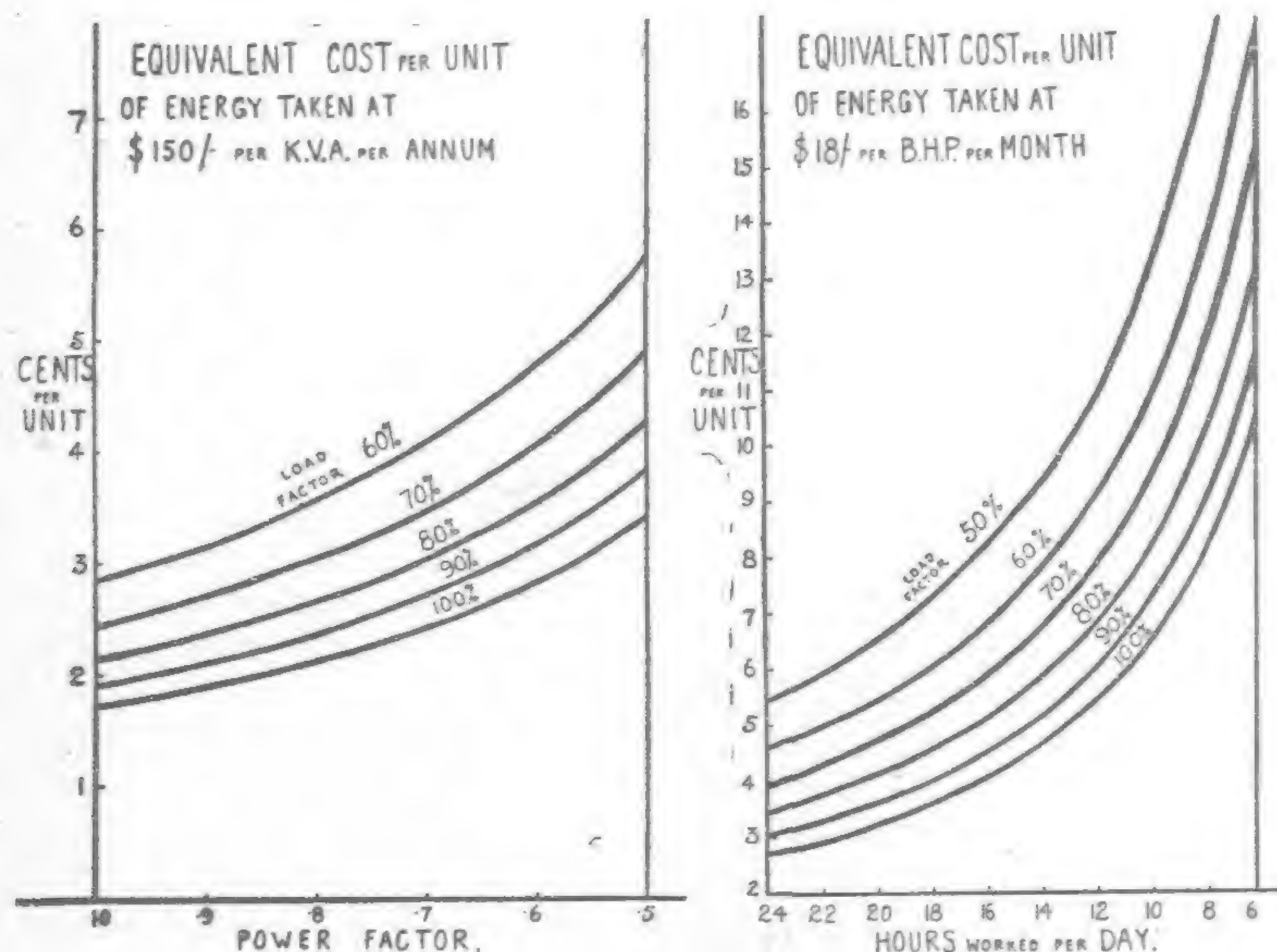
Modern Hydro-Electric Power Station—Dam from Down Stream Side

6,600 volt consumers' lines therefore have the special protection of motor operated switches with automatic reclosing devices for rapid restoration of service after any temporary fault. Any interruption caused by a consumer to his own supply will thus be almost immediately remedied.

In a scheme intended primarily for industrial supply it is of the utmost importance that the supply is reliable and continuous. Reliability and continuity of supply are the two vital features of the Perak Scheme which has been designed by Engineers of the highest

standing and which will be carried out by firms having a world wide reputation.

The transmission line contract has been placed with the British Insulated Cables, Ltd., whose work in Europe and the East is of an unsurpassable quality. The transformers are being made by the Swedish General Electric Company at their London works and the switchgear is being supplied by the Metropolitan Vickers Electrical Company, Limited: it will therefore be recognized that a transmission scheme carried out by the above firms will be as sound a work as the Engineering World can produce.



Modern Hydro-Electric Power Station—Interior

Relative Economic Interests of Japan and America in the Far East

(Continued from page 503).

industrialism together with the shifting of her low-grade manufacturing plants to China will increase the demand for American iron and steel, machinery, raw cotton and other materials from both countries. The greater the industrial development of the Far East, the greater will be the demand for modern high grade American mechanical appliance and machinery, without which we cannot hope to achieve success.

In other words, the commercial interests of Japan and America in the Far East, far from conflicting with each other, are closely linked together. Our efforts supplement each other and only through

a cordial understanding of each other's needs can the Far East be developed along lines that will prove of mutual benefit. Japan and America are now and have been for several years past, co-operating harmoniously in the development of the Far East. There exists no misunderstanding between our respective governments. Our traditional friendly relations are bound to become more and more intimate. The future holds out a bright promise for closer economic co-operation. I am happy to be able to say to you that Japan has always had this goal in mind and has endeavored by every honorable means to bring it about.

Electric Industry Growing Rapidly

ALMOST as soon as any other nation in the world commenced the development of the electric power industry on a large scale, Japan launched upon the power career which has placed it second to but one nation in the world as to use of electricity. There is hardly a hamlet in the country which does not have electric lights. Most factories of any size drive their machines by electric power. Every other person in Japan, according to Government figures, is served by at least one electric light.

The recent growth of the industry, which has come in spite of the depression under which the country has been laboring since the 1920 slump, is shown graphically in the following table:

PLANTS IN OPERATION

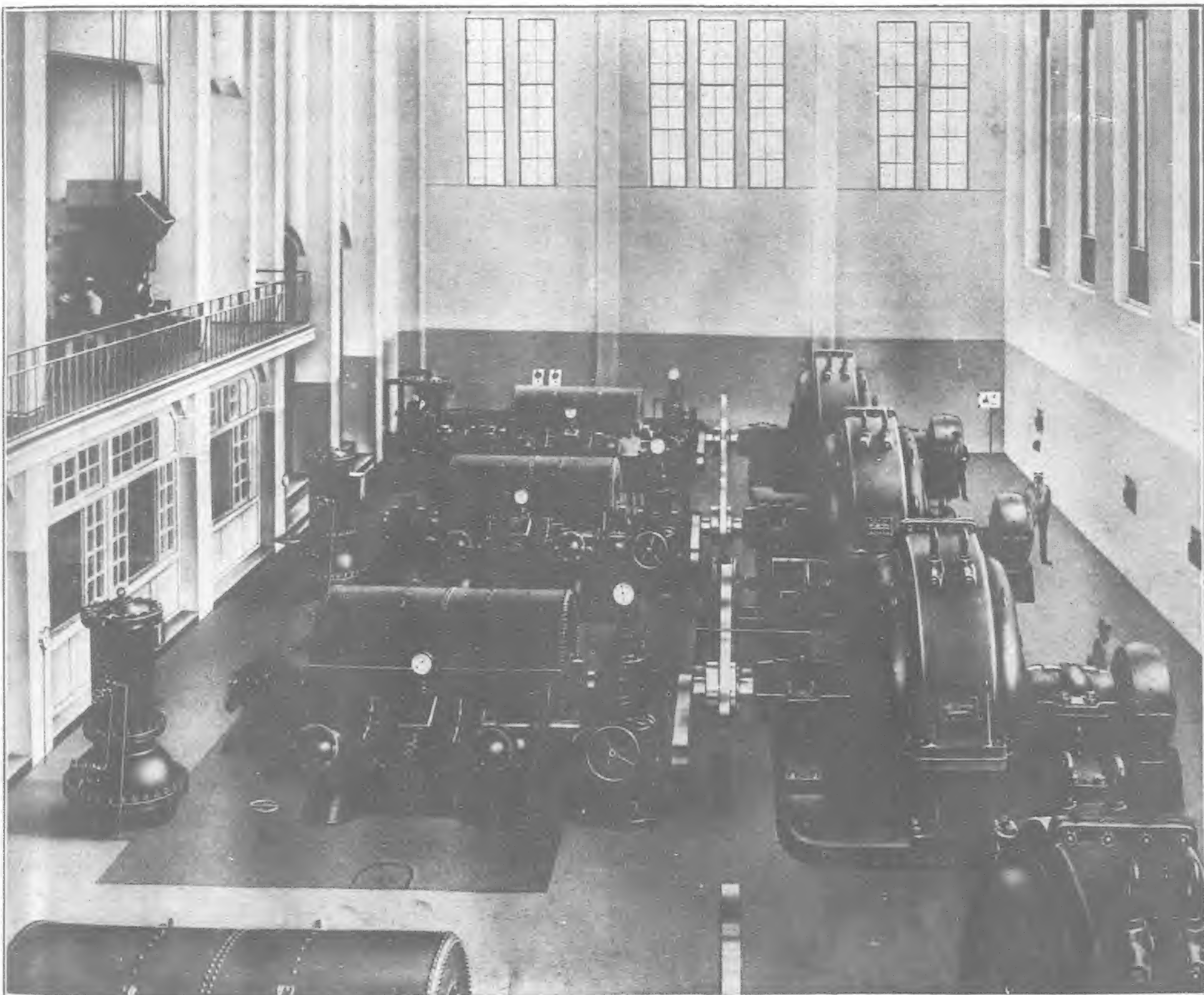
				1926 k.w.	1925 k.w.	1924 k.w.
Hydro	...	...	...	2,230,576	1,813,508	1,474,357
Steam	...	...	...	1,193,291	954,633	763,146
Total	...	...	...	3,423,867	2,768,141	2,237,503

PLANTS UNDER CONSTRUCTION

Hydro	...	...	...	1,349,329	1,076,526	1,021,963
Steam	...	...	...	437,060	397,937	250,332
Total	...	...	...	1,886,389	1,474,463	1,272,295
TOTALS						
Hydro	...	...	...	3,579,903	2,890,034	2,469,320
Steam	...	...	...	1,640,351	1,532,330	1,013,478
Totals	...	...	...	5,210,344	4,242,604	3,509,798
				h.p.	h.p.	h.p.
				7,118,307	5,687,272	4,718,227

Developments of the nation's hydro-electric resources amount to about a third of the total resources.

At the end of 1926 there was a power surplus of about 600,000 k.w. The reason for this was that power magnates expected a much greater increase in the demand for power than the financial condition of the country has made possible. More plants are being erected and many more are in project. This is the principal problem of the industry to-day and one which the best brains of the country are trying to solve. This situation was aggravated by the



The Kuretsubo Power Plant of the Tokyo Electric Power Co.

decision of the Ministry of Communications to allow competition in certain districts. The surplus of power has brought about competition in power sales and the purchase of small companies which possibly may provide outlets.

At the end of 1926 the authorized capitalization of the electric power industry was Y.3,115,800,000, of which all but about Y.500,000,000 was paid up. The total foreign investment in the industry was Y.195,000,000.

Tokyo Light Largest

The Tokyo Electric Light Company is the largest of the electric power companies and the largest industrial corporation in Japan Proper in point of capitalization and assets. Its capitalization is Y.345,724,000, almost fully paid. Its debentures outstanding total Y.163,590,800 and it has bank loans to the extent of Y.79,925,578.

Thus, the paid capitalization of Tokyo Dento is about 13 per cent. of that of the entire industry.

On May 31 of this year, the total generating capacity of the company was 387,925 k.w., about 11 per cent. of that of the entire industry. This was divided into 313,150 k.w. of hydro-electric power and 74,775 k.w. of steam power. The company also purchased 227,955 k.w. of power from other companies, giving it a total of 615,880 k.w.

On the same date the company's aerial transmission lines covered 2,688.7 miles with 11,879.8 miles of wire. The equivalent figures for underground lines were 160.1 miles and 545.3 miles of wire. The company maintains 198 sub-stations, with an aggregate equipment capacity of 2,215,000 k.v.a.

During the six months' term which ended May 31, the company added 363,748 electric lamps to its connected load, bringing the total to 7,378,781 lamps. Power sales increased 8,485.7 k.w., bringing that total to 430,901.7.

Figures on Growth

Figures on the growth of the company's capacity and sales of power and lights follow, for the last three half-yearly terms:

	1927—1st	1926—2nd	1926—1st
Generating capacity (k.w.)	387,925	363,587	328,100
Bought power (k.w.) ...	227,955	216,778	189,700
Total power (k.w.) ...	615,880	580,365	517,800
Power sold (k.w.)...	430,902	422,416	392,103
Lights supplied ...	7,378,781	7,015,033	6,700,058

Selected items from the balance sheets and profit and loss accounts of the company for the same periods follow:

	1927—1st	1926—2nd	1926—1st
(000's omitted)			
Paid capitalization ...	Y.345,724	Y.345,724	Y.345,724
Fixed assets ...	540,369	491,454	491,247
Construction a/c. ...	23,912	55,302	41,272
Receipts ...	52,609	50,869	57,824
Depreciation ...	2,200	2,200	1,700
Net profits ...	16,460	16,624	16,934
Brought forward ...	3,057	2,830	2,793
Av'ible dividends...	19,518	19,455	19,726
Distributed:			
Legal reserve ...	830	840	850
Dividend ...	15,558	15,558	16,047
Carried forward ...	3,130	3,057	2,830

Toho Solid Company

The Toho Electric Power Company, under the able management of Mr. Yasuzaemon Matsunaga, is recognized as the solidest of all the Japanese companies of the electric power industry. Its capitalization is Y.102,204,226, paid up.

The company was organized in 1889 by its parent, the Nagoya Dento Kabushiki Kaisha. In 1917, the Nagoya company transferred its rights in the Kiso and other rivers to a new company which now has become the Daido Electric Power Company. In 1921 seven companies, including the old Nagoya company, were merged to form the Kwansai Electric Company. Other mergers followed, the present Toho Electric Power Company emerging.

The Toho Electric Power Company sells power and light to one city, 12 towns and 66 villages in the Kwanto and ten cities, 84 towns and 448 villages in the Kwansai. It has 589,686 customers, 1,588,788 lamps and 101,220 k.w. of power sales. It has 2,208.5 miles of high tension and special high tension lines for power and 15,460.9 miles for distribution.

The Depreciation of Rolling Stock

(Continued from page 496).

between the original cost and its scrap value." This fixes an arbitrary life of 25 years which cannot under present conditions of practice prevailing be considered as accurate. Repairs are pushed to indeterminate limits, new rolling stock is bought, not to replace old, but to increase the chronic shortage of cars which prevails in most countries whose railway system is not an old institution. It is a curiously illogical fact that no attempt is made to depreciate rails, only 2 per cent of whose weight is available for useful life, and whose renewal is a very expensive item, undoubtedly warranting the creation of some form of sinking fund for replacement.

The question of depreciation would therefore appear to need adjustment to be more in accord with actual fact and practice.

Navigation on the Sungari

The question whether vessels flying the Russian flag are permitted to navigate the Sungari or not has been definitely settled this year by a decree, promulgated at Mukden in August, ordering the transfer of all vessels and navigation property owned by the Chinese Eastern Railway to the Chinese naval authorities. Orders were also issued to detain certain ships flying the Chinese flag but suspected of being operated in partnership with Russian capitalists. As far back as the beginning of 1924 a similar decree was issued by Marshal Chang Tso-lin, prohibiting any vessels other than those flying the Chinese flag to navigate the inland waters of Manchuria. As a result, foreign shipping companies, with the only exception of the Chinese Eastern Railway, were compelled to sell out to Chinese owners or transfer their vessels in some way or other to the Chinese flag. Though the Chinese Eastern Railway fleet was only partly Russian, its ensign being the joint flags of the Chinese and Soviet Republics, its vessels were also included in this prohibition. In consequence, the Chinese Eastern Railway flotilla has been idle during the past two navigation seasons, thus accentuating the lack of light-draught barges, of which the Chinese-flag owners are very short. This inactivity has meant a great loss to the Chinese Eastern Railway, whose fleet was by far the largest in Harbin, numbering 11 steamers and 30 barges, with a carrying capacity of about 18,000 tons. To put an end to this abnormal situation, the above-mentioned decree by Marshal Chang was carried out in the beginning of September, regardless of many protests from the Soviet Government, and the Chinese flag was hoisted over all the offices of the Chinese Eastern Navigation Department.

High Frequency Telephony Over Power Transmission Lines in Japan

This problem was taken up in Japan in 1917, six years after the publication of details of systems of Ruhmer in Germany and Squier in America on wired wireless systems, but was conducted on the lines of valve technique rather than with arc generators. Experiments were conducted in 1918 over a line 125 miles in length. Later in the same year, on a 22,000 V line 20 km. long connected to a complicated network, excellent results were obtained with 5 W in power and a wavelength of 3,000 m., using extra high tension condensers.

Later, to avoid the use of such condensers, lengths of conductor were run for some distance below the main conductors, and a satisfactory system was developed. Owing to the fact that in this directional work the receiving energy may be large and the high frequency path is almost a closed circuit, disturbances from interferences, static troubles, etc., are remarkably reduced as compared with ordinary radio work; a simple and sure calling device can therefore be used. One which utilises the principle that a change in anode current of a receiving valve can be caused by a change in grid voltage brought about by arriving oscillations.

There are four installations in use in Japan. That of the Kingugawa Co., 123 km. in length, with a 66,000 V line with wavelengths of 7,500 and 9,500 m.; Ugigawa Co., 34 km., 22,000 V, wavelengths 1,000 and 1,700; Tokyo Co., 194 km., 154,000 V, 8,000 and 12,000 wavelengths; and Nihon Co., 313 km., 89,000 V, 8,500 and 11,500 wavelengths.

The coupling wires are several hundred inches in length, and are spaced from 2 m. to 4.5 m. minimum distance from the main conductors. The first three of the above operate on the system developed by the State Electrotechnical Laboratory.

The Tokyo Electric Light Company

Asahi Sub-station

To Properly Utilize the Vast Amount of Hydro-electric Power to Best Advantage
Many Recent Developments have been Made by this Electric Light Company

I. F. Baker

THE Tokyo Electric Light Company supplies all of the light and power required in the vicinity of Tokyo; distribution is made throughout the city by means of an 11.22 kv. underground system. Because of the enormous increase in demand for power in the city it was decided to construct in addition to the

11.22 kv. system a complete outer circle line at a 140.154 kv. and a complete inner circle line at a 63.66 kv. which would tie together the company's larger terminal substations at Asahi, Owada, Hatogayn and Hanabata.

To supply the power to this inner circle line at 63.66 kv. the Westinghouse Company has furnished ten 25,000 kv-a. single phase transformers. Three of these transformers, the switching equipment and other apparatus have been installed at the Asahi sub-station. Current is supplied to this substation by two feeder lines at 150,000 kva. from the outer 154 kv. rings. Each incoming line is provided with an oil breaker and two sets of disconnecting switches. The transformer bank has high tension oil breakers with isolating and shunt disconnecting switches.

The 63 kv. leads from the transformer bank are also provided with an oil breaker having isolating and shunting disconnecting switches.

The 63 kv. leads from the transformer bank are also provided with an oil breaker having isolating and shunting disconnecting switches as well as two selector disconnecting switches to permit feeding either or both of two 63 kv. bus bars. The 63 kv. bus bars are connected through a tie breaker and either or both busses can supply the four double circuit outgoing feeders one of 300 amps. capacity, two of 600 amps. and one of 1,200 amps. The last supplies the 63 kv. inner ring and the others go to large consumers.

The 11 kv. circuit from the tertiary winding of the transformers passes through a breaker with isolating and shunting disconnecting switches to sectioned 11 kv. bus. Each of the two sections of this 11 kv. bus is arranged

to supply one present and one future synchronous condenser of 25,000 kva. capacity. To each section of bus is connected also, a bank of transformers stepping down to 3.3 kv. for starting purposes and a transformer of 200 kva. supplying 220,110 volts for station service.

All of the equipment for the 154.140 kv. primary circuit and 66.63 kv. secondary circuits are of outdoor construction employing Westinghouse type G. 22 oil circuit breakers in the 154 kv. circuits and type G. 222 oil circuit breakers in the 63 kv. circuits.

Very substantial steel work girders and columns are used for the supports of the bus bars connections and disconnecting switches. The switches on the topmost trusses are motor operated horn break switches of Westinghouse design.

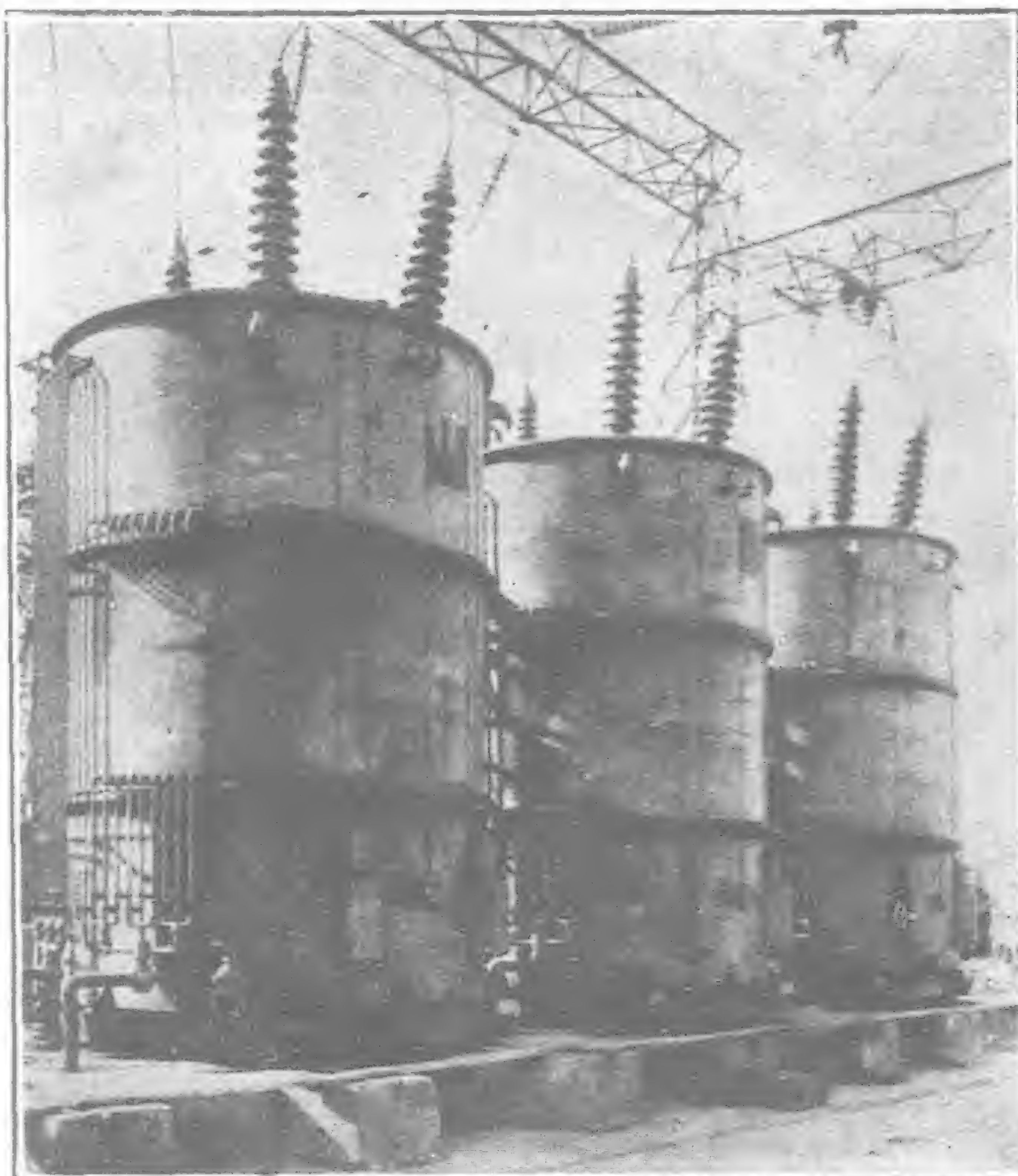
For the 11 kv. transformer, bus sectionalizing and condenser circuits Westinghouse 0-33 oil breakers are used. Between the main part of the bus and the parts supplying the starting transformers, station service transformers and local service feeders current limiting reactors are used permitting Westinghouse type E-16 breakers to easily handle these less important circuits.

The control desk has mounted on its inclined top the control switches, with their indicating lamps arranged in a miniature bus layout to show the connections of the breakers and motor operated disconnecting switches. While there are no exposed live metal parts on the control desk or switchboard panels, rubber mats in front of the desk and board furnish an additional safeguard. In front of each desk section is the corresponding panel of the instrument switchboard.

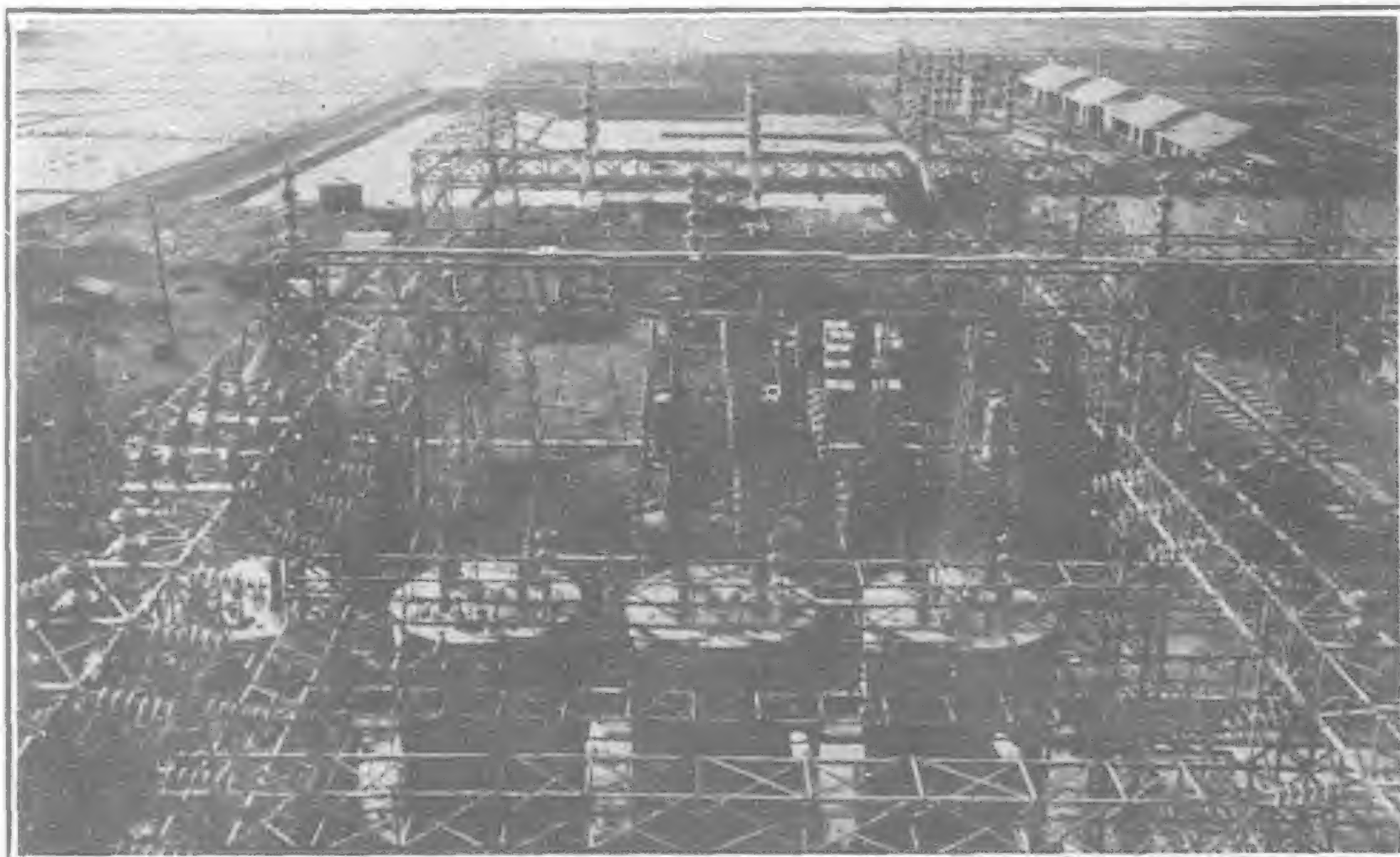
The arrangement of the switchboard is as follows: at the extreme left hand end is a swinging panel containing two a-c voltmeters, one a-c ammeter, one synchroscope and synchronizing lamps.

Two panels are used for station service and contain the alarm bell, the transformer ammeters, wattmeter, watthour meter, etc.

(Continued on page 513).



Three of Ten Transformers Supplied by Westinghouse to the Tokyo Electric Light Company



A View from the Roof of the Station Looking Over the Transformers Toward the 154 Kv. Oil Circuit Breakers



Entering the Drying Chambers



What a Brick Kiln Looks Like

A Modern Chinese Ceramic Works

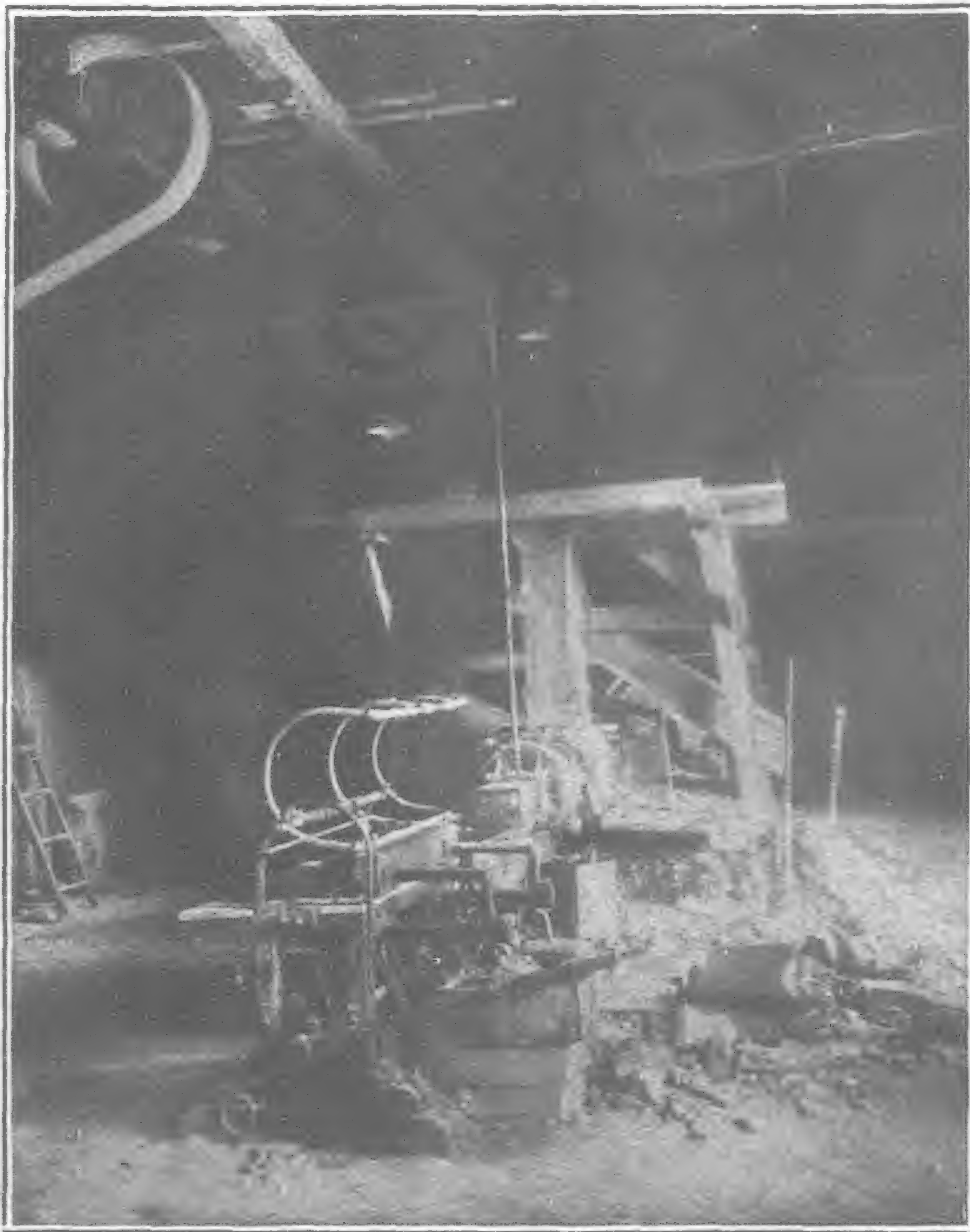
H. F. Wilkins

BRICK making is one of the oldest industries in China. Many of the old pagodas and temples that tourists come to see are made of brick, and the ability of these structures to withstand the battering of wind and rain and scorching sun through generations shows the care with which ancient China wrought. In many

provinces bricks are made to-day by the same laborious and primitive methods used by the old pagoda builders, but Shanghai harbors a modern brick making concern whose product compares favorably with the best of other countries, and whose methods and equipment are a living proof that not all of China is back in the dark ages as far as industry is concerned.

The Tai Shan Brick & Tile Company, Ltd., of Shanghai, organized only six years ago with a capital of \$15,000 and a small plant at Kashan, in Chekiang Province, to-day is capitalized at \$1,000,000. It owns the largest and most up-to-date ceramic works in China according to its advertisements, a \$400,000 plant covering more than 26 acres (160 *mow*) at Lunghwa, Shanghai, where they make face bricks of all shades, paving blocks, fire bricks, roofing tile, ridge tile and fire clay. The machinery is all of modern American make. Power is furnished by a 190-horse-power Lanz steam engine and transmitted to the machinery through overhead shafts. A laboratory is maintained for constantly testing the quality of the products. Twelve kilns are burning day

and night in this plant, turning out brick and tile at the rate of some 25,000,000 a year, and 500 drying sheds are provided for storing the product until it is ready for shipment. The plant has its own transportation system, a fleet of 50 junks which ply the Yangtze the year around with their loads of clay and finished products from the No. 1 plant at Kashan.



The Auger and Cutting Table

Brick Works in Kashan

Brick manufacturing is one of the chief occupations of the farmers in Kashan, Chekiang, during the warmer seasons according to the *Chinese Economic Bulletin*. There are approximately 500 brick kilns in all, 100 being located in Kanyaochen, 90 in Hungchiatan, 150 in Hsiat'ienmiao, 20 in Fanching, and 3 or 5 in each of the adjacent smaller villages. With all the kilns operating, the monthly output of bricks in Kashan is estimated to be from 45,000,000 to 50,000,000. On account of internal warfare during recent years, however, the total output has been curtailed to 20,000,000 per month only. Seventy per cent. of the output is consumed in Shanghai alone, the rest being distributed in Kiangsu and Chekiang. The transportation fee from Kashan to Shanghai is between \$18 and \$20 per 10,000 bricks.

The brick manufacturing season usually opens in April and closes in November. Work has to cease during December, January, February, and March because of the severe cold weather.

The method of preparation may be divided into two main



Workers Have their Own Quarters

A Chinese Concern

The Tai Shan Company is entirely Chinese. It was founded in 1921. The four present directors, all of them among those who originally started the project, include C. C. Nieh, former chairman of the Chinese General Chamber of Commerce in Shanghai; Y. M. Chien, president of the company and also vice-minister of finance for the Nanking Nationalist Government; Dr. S. M. Woo, who is now in the United States, and S. M. Wong, general manager.

The remarkable growth of the company in the face of conditions as they exist at present in China is a testimonial to the business acumen of its founders. When the first plant was built at Kashan six years ago, prices were higher and there was more profit than now. Also, there was vastly more projected building, more demand for the product. This first factory had little of the modern equipment that features the new plant. It was built close to the clay fields where all the raw material comes from at the

present time, and the finished product shipped by river to Shanghai. Most of the brick and tile from both the No. 1 plant in Chekiang and the No. 2 plant at Lunghwa still is marketed in Shanghai.

The history of the Tai Shan Company has in it all the romance of a successful concern modeled on the lines of big business, and combines with it certain picturesque attributes that naturally attach themselves to any business having to do with China and the Chinese. The raw material floats down the Yangtze in junks manned by singing coolies, comes with the tide up the Whangpoo, and is unloaded at the back door of the factory to undergo a strange

steps, moulding and burning. Clay is first taken and any stones or parts of plants or other miscellaneous matters present in it are removed. The cleansed clay is mixed with water till it becomes a soft sticky mass when it is pressed in wooden moulds of the desired shape and size, though the common size is 1½-in. by 4½-in. by 8½-in. When it is taken from the mould it is exposed to the sun to be dried.

When dried, it is known as unburned brick. These are usually sold to kiln owners at \$16 to \$20 per 10,000. The price two years ago was between \$25 and \$30 per 10,000.

The brick-kiln is semi-cylindrical in shape and built of bricks and plastered with clay on the outside. An arched doorway serves as an inlet for the unburned bricks and an outlet for those burned. At the bottom of the kiln there is an iron grating bed for fuel.

The kiln when filled with unburned bricks is closely plastered with mud in order to make it air tight. An oblong hole is, however, purposely made on the top of the kiln as a smoke passage. After closing the kiln up fire is started. The bricks are burned for seven days when water is slowly let in through the smoke passage to cool the bricks. The watering of the bricks is considered very important as on it depends the quality of the bricks produced. About 5,000 catties of straw and 5 tons of Kaiping coal dust are needed as fuel for every kiln of a capacity of 60,000 bricks.

About \$70 is required to keep one kiln going for 12 days, that is, from the time the bricks are placed in the kiln to the time the finished bricks are loaded for shipment. The prices of the finished bricks differ greatly according to their color and shape. The best color is blue. The price is usually \$50 per 10,000 pieces for the best quality and \$35 for the inferior quality. The bricks produced at Kanyaochen are considered best, those at Hungchiatan second, and those at Hsiati'enmiao third.



The Dry Pan



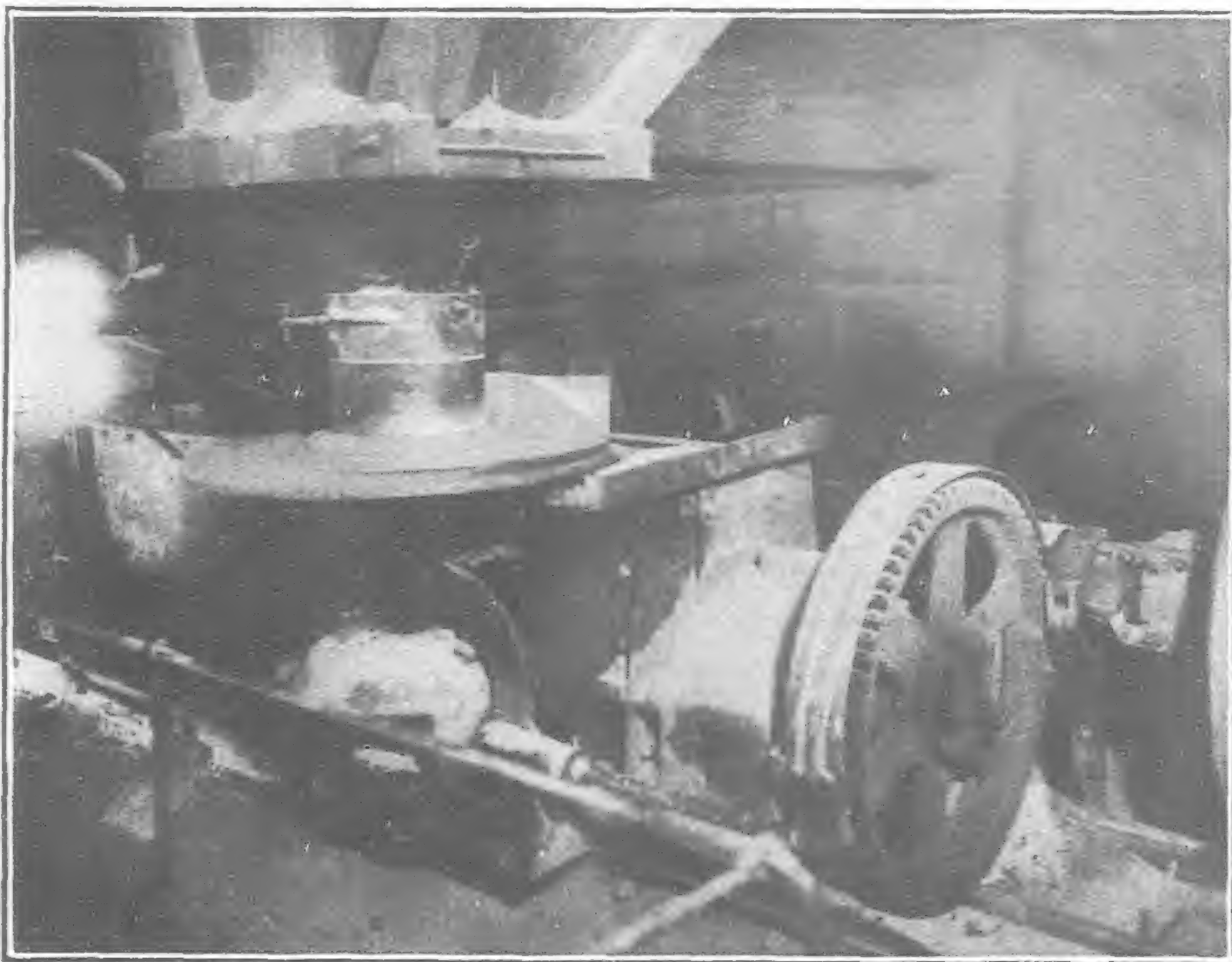
Piano Wire Screen and Conveyor Belt

process of pressing and baking to become a part of the architecture of China's biggest city.

The plant at Lung-hwa has all the hum and speed of big industry in other lands, and production is so organized as to be responsible in a large measure for the efficiency that has put the concern on the path of success despite civil war, financial troubles and lagging business conditions. Still it is manned by raw countrymen from Chekiang province, imported to Shanghai, living in their own quarters provided by the company, and trained in an industry as strange to them as if brick making were new to the Chinese. It took foresight to see the possibilities in such a plant at Lung-hwa, promotion of the highest order to establish it, and perseverance to keep it going.

The Lung-hwa Factory

In appearance the Lung-hwa factory is not unlike any other modern factory except that it appears to be on an island. On one side it faces the Whangpoo River, and on two other sides a wide ditch has been dredged out as a private waterway for the company's own use. Wind and weather conditions do not always permit



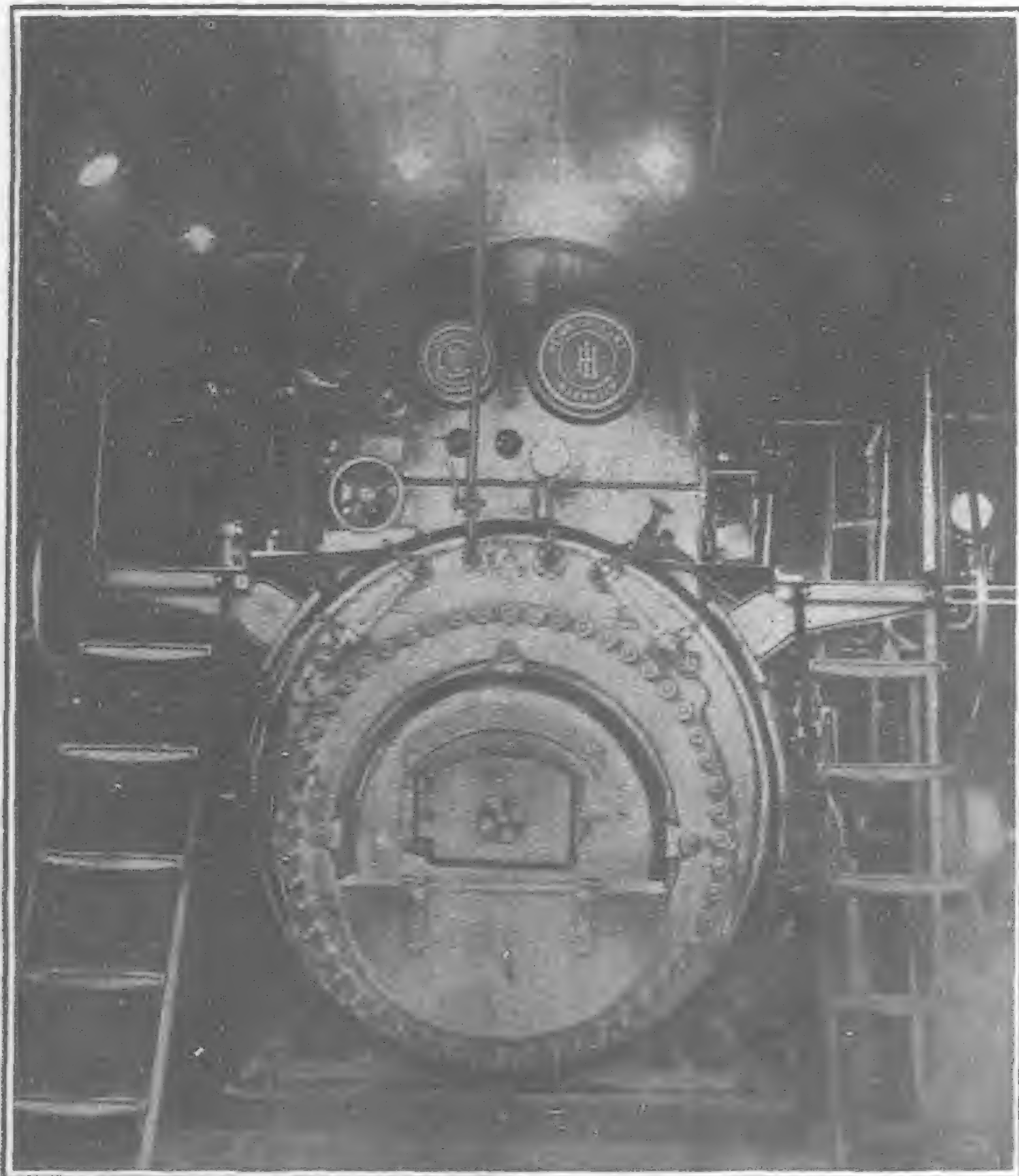
The Pug Mill

loading from junks directly into the factory, so this moat was dredged out for the barges to enter. The clay is dumped at the back door, carried directly into the plant by means of dump cars on rails, a small transportation system furnished by the Hadfield-Penfield Steel Company of Bucyrus, Ohio. This company also furnished the ventilation and drying system in the plant. The dump cars, hand propelled, also are used for carrying bricks to and from the kilns.

The twelve kilns are all under one long roof, two to a chimney. Drying sheds cover most of the area occupied by the plant (160 mow). The laboratory for testing the product while in the

process of manufacture, is in reality a small kiln outside the main building, where the engineers and foremen bring the samples of wet clay from time to time for testing its hardness and its action under varying degrees of heat.

The Hadfield-Penfield Company furnished most of the other machinery used directly in making the bricks and tile, including a set of steel dry pan, the piano wire screen for pulverizing the raw material, a pug mill for tempering the wet clay, the auger machine, which presses, moulds and cuts the brick; tile machines and various accessory equipment.



The Lanz Power Unit



The Brown Pyrometer

Designs were furnished by this company for the manufacture of the kilns. T. Y. Liu, engineer in the Lunghwa plant, formerly was an engineer for this company in America, and was trained by them.

The motive power for running this machinery is furnished by a 190-horse-power stationary engine of German make (Heinrich Lanz, Mannheim) set over a Lanz boiler. This unit was purchased from Carlowitz & Co. Power is transmitted through an overhead shaft system. The pyrometer for measuring the heat in the kilns was purchased from the Brown Instrument Company. Coal is used for fuel, both in the Lanz boiler and in the kilns.

How Bricks are Made

Brick making by modern methods is an interesting process. The clay, usually fairly dry when brought to the factory, is taken in dump cars from the stock piles to the dry pan, where it is pulverized to the texture of talcum powder and rendered free from moisture. From the dry pan it passes down a chute through a piano wire screen, which spreads it on a broad conveyor belt in layers of uniform thickness and texture.

This conveyor belt carries it to the pug mill, where it is mixed with water to the desired consistency, forming the clay that passes along another carrier system to the auger and cutting table. Here it is packed under high pressure into a rectangular steel aperture, with dimensions corresponding to the size of the face of the brick specified, fire brick, face brick or tile, as the case may be. It comes out in a long bar of clay, and a knife descends at intervals to cut it to the desired size, when it is loaded on the cars again and taken to the kilns for baking.

A drying process intervenes before fire is applied however. In suitable weather, the brick forms are left in the sun for two or three weeks. Otherwise the artificial dryers are used, completing the drying process in two or three days.

In the kilns the bricks take six days and nights for baking, then eight more days to cool. Tile is left in the kiln to cool off by itself, slowly, but face brick is cooled more quickly by having the heat drawn off through the ventilation system. Ordinary brick calls for a baking heat of 1,800 degrees, Fahrenheit; face brick, 2,050 degrees; roofing tile, 1,950 degrees, and fire brick, 2,400 degrees. The pyrometer stands 3,000 degrees Fahrenheit.

Production and Distribution

This No. 2 factory at Lunghwa is capable of turning out in a year's time, 3,500,000 roof tiles, 4,000,000 ordinary brick, 15,000,000 face brick (thin type), and 300,000 fire brick, and with further expansion planned for the near future, the production will be increased considerably, it is expected.

The No. 1 factory in Chekiang Province turns out 1,500,000 roofing tiles, 2,500,000 ordinary brick and 500,000 fire brick. No face brick is made here. The total value of production annually is estimated by officers of the company to be approximately \$1,000,000 whereas in the first year of operation, 1921, with the Chekiang factory alone operating, the value of production was only about \$50,000.

Distribution is mainly confined to Shanghai. The sales and general office is at 421 Lloyd Road. Sales are made largely through contractors of the city, who are subject to approval of their choice of material by the architect under whose direction the building was designed.

Several of Shanghai's newset buildings are using the Tai Shan products. The new Foreign Y.M.C.A. on Bubbling Well Road is one. Two big new apartments in Frenchtown are using Tai Shan brick. The N.Y.K. Building on The Bund is made of this, and many of the new shops now being built in Frenchtown are using this product. The company points with pride to several awards from exhibitions. First prize for clay products at the Kiangsu Provincial Exhibition in 1925 was awarded the Tai Shan Company. This carried a gold medal award. First prize for roofing tile and hollow brick was awarded to them at the Industrial Chemical Exhibition in the Chinese General Chamber of Commerce in Shanghai in 1924.

Expansion

With a record of solid and progressive growth behind it, the company is planning large scale expansion in the future, with branches in China coast cities and southern ports, such as Manila, Singapore, Indian cities and the South Seas generally.

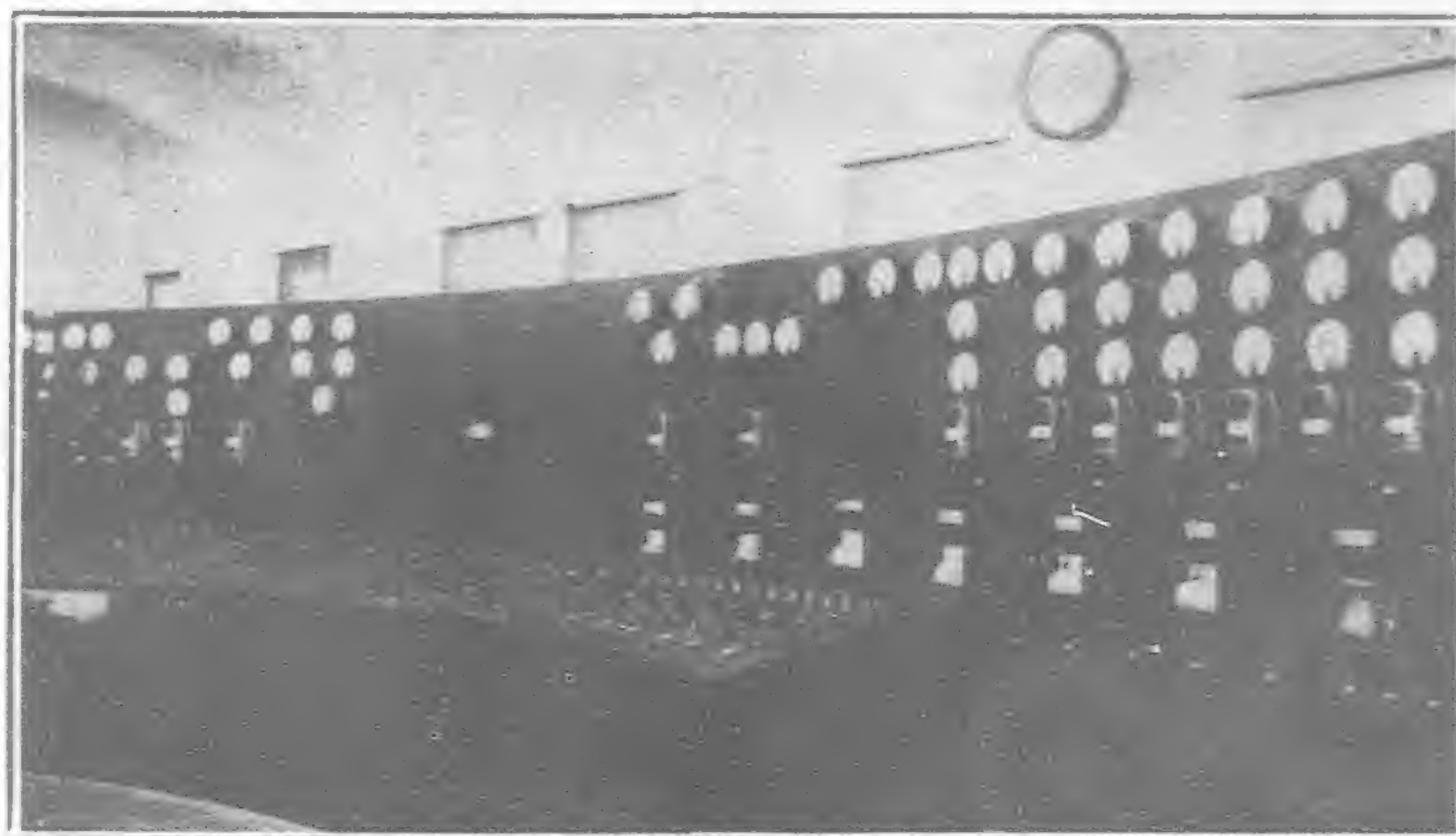
The Tokyo Electric Light Company

(Continued from page 509).

One panel is provided for 2-11 kv. feeders with ammeter, wattmeter, power factor meter and watthour meter in each circuit. The corresponding relay panel contains overload relays for these feeder circuits as well as for the starting transformer and station service transformer.

The fourth panel controls the motor operated 25,000 kva. condenser with its exciter and motor. It is provided with a very complete equipment of indicating meters with temperature measuring devices. The corresponding relay panel has differential relays and needed to obtain semi-automatic starting and synchronizing of this unit.

The next three panels are for future condensers and will be later equipped with apparatus similar to the fourth panel. The temperature indicating meter for the four condensers is actually mounted on the panel six.



A View of the Curved Control Desk and Vertical Instrument Panels

The next two panels are for the control of the present and future 75,000 kva. three winding transformer banks with instruments for all three windings including graphic voltmeters, watthour meters, etc. The differential relays are arranged to give a proper protection to the transformers independently of how the load might be divided on the three windings.

The tenth panel controls the incoming 154 kv. lines and it contains a multi-circuit graphic recording wattmeter to record the entire load of the station no matter how it is divided.

The last four panels each control a 63 kv. double circuit outgoing feeder either connecting to the 63 kv. inner ring or supplying power at that voltage to important customers.

Other important stations supplying the bulk load to the neighborhood of Toyko will probably be arranged in a manner rather similar to that of the Asahi sub-station.

Coal Mines at Hushihlin, Kirin.—Five mining companies are operating at Hushihlin, a coal mining center about ten *li* east of the Tingchengtze station on the Kirin-Changchun Railway. The coal mines were discovered some 30 or 40 years ago but only very recently have they attracted the attention of capitalists. The Yu Ki Co. was organized about a dozen years ago and was working on a limited scale, but is now equipped with modern machinery, and employs 100 miners under a Russian mining expert. Its daily output is about 100 tons. The Yu Tung Company was organized about four years ago with a capital of \$3,000,000. It employs 300 miners and produces 400 tons of coal daily. It has recently built a light railway to Yingchengtze station. The Yu Hwa Company, capitalized at \$500,000, is just organized and has not yet started operations. The Yu Hsi Company is also newly organized and is expected to start work next spring. The Tung Yuan Company is now suspended owing to lack of capital. The coal is chiefly of the anthracite variety and in quality compares favorably with the product of the Fushun mines.

British-Built Coaching Stock for Imperial and Foreign Railways

By G. G. Jackson

BRITISH supremacy has been challenged on all directions within the last few years, and specially in the particular trades in which this country had a distinct lead. In many cases markets which were ours completely—or nearly so—are now scarcely open to us, and there is the usual wail from the pessimists.

In one direction, however, there is room for optimism, and that is in connection with railways. Not that foreign markets are so entirely British as they once were, but we do find that, over and over again, despite severe undercutting from Continental and U.S.A. builders, the contracts still come to Britain. Particularly is this true in the case of locomotives and coaching stock, whilst in the matter of goods stock, steel rails, general equipment, especially signalling, the British makers may be said to be holding their own.

It is fitting that this should be the case, since Britain may claim to be the real home of railways, and also that the existing systems in this country are still ahead in the race for efficiency, equipment, and good workmanship, both of track and rolling stock.

In this, and following articles, we are more concerned with British-built rolling stock for overseas, having already glanced briefly at home production for home railways.

In the great dominion of Australia, with its rather complex railway systems comprised of three distinct gauges, home-production is increasing so rapidly that the British builder will soon be more or less completely ousted. The Australians have learned their lesson, and learned it well. But, quite recently, British builders have been called in to execute orders, totalling 50 all-steel coaches, for the electric lines of the New South Wales Government Railways, Sydney Suburban Section. The bodies, under-frames and bogies were built in the home country, and then, in sections, despatched to Sydney, where local craftsmen undertook their erection. In addition, the complete furnishing and painting of the assembled cars was undertaken in Australia.

The overhead trolley system, now no longer in favor on British railways, has been adopted for this electrification scheme, and the cars are exceptionally large and well proportioned. Thus, the motor cars are equipped with driver's compartment, and then three distinct passenger compartments also, the latter being inter-communicating by vestibules, in which are situated the main doors for entry and exit. These are of the sliding type, with which Londoners are now

so familiar on their underground trains. The sliding doors are planned to have no center post, and access to the compartment is gained by means of single sliding doors. But end doors, of the double-swing type, provide for inter-communication between the cars.

The under-frames are exceptionally well-designed, and are built up of steel press-

ings, plates and rolled sections. Each under-frame was made in two sections, so that, on arrival, all that was necessary was the joining up in the center; care being taken in the design that there should be no weakness here. The body framework consists of pressed steel pillars between the windows, also at the compartment corners and ends, where they form the door-posts. The framing on the outside consists of specially treated steel plating, the idea being to prevent corrosion by the use of good lead coating. On the inside, some very highly finished steel panning is found. The windows are frameless, placed in felt guides in the steel pillars, but mahogany louvres are provided for the hot weather, and to secure perfect ventilation.

The doors are of cast aluminium, with lights in the upper panels. Pressed steel arch bars are used for the roof framing, upon which are riveted lead-coated steel sheeting. The ceilings of the cars are formed of "Agasote," a fire-resisting composition sheeting.

The lighting of these cars shows a distinct advance on the old-fashioned method of an electric light bulb immediately under the roof, which makes reading a most difficult process in many British electric and steam trains.

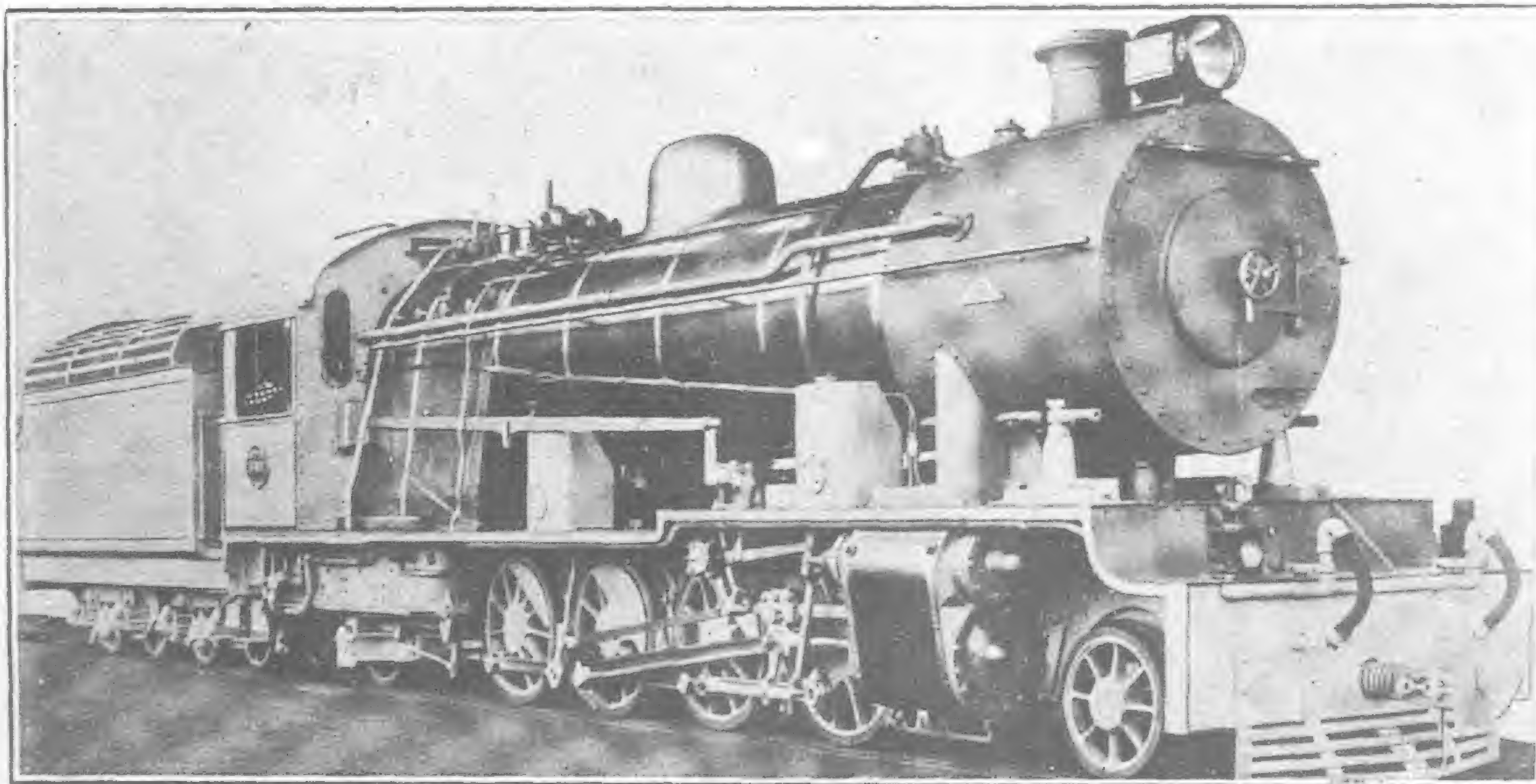
The electric lamps, in these coaches, are fitted behind trough-shaped, white opal shades, and these are spaced out with intermediate pressings of the same contour to form two practically continuous ceiling mouldings, running the length of the car, one on each side of the center line. The general effect is distinctly pleasing, and gets rid of the rather monotonous range of ceiling so often found in steel-built coaching stock. In addition, a very equal light distribution is effected.

In countries where extreme heat is experienced, not the least difficulty of a designer is to ensure an equable temperature within the coach. In the case of the stock under review, this had been attempted by using a heavy green baize insulation between the two steel sheathings of the sides. The roof has been insulated by the provision of an asbestos cell secured to the outer sheathing of the coach body (between the outer and inner lining), so that it is claimed that the best has been accomplished. Thick cork sheathing has been laid on the floors, and this is then covered with heavy linoleum.

Steel-framed seats are arranged throughout, and they are reversible.

The cars have a length of 61 feet 4 inches over head-stock, and an extreme width of 10 feet 4 inches.

The livery adopted for the external painting is Tuscan red for the body up to the windows, with russet for window frames, and for panning above the doors and corner pillars. Externally, the roofs are grey, but white enamel is utilized for the interior painting up to the window sills, beyond them cream enamel,



2-8-2 Locomotive Constructed by Messrs. Nasmyth Wilson, England

Adapting Old Rolling Stock

Following on the practice of British railways who have gone over to electric traction for suburban lines, the New South Wales Government railways have converted many of their steam-hauled coaches for the new services.

Thus, no less than 150 bogie cars built rather more than ten years ago for steam-hauled suburban trains, have been dealt with. These are bogie cars upon cantilever frames. These cars have been taken in hand, and practically reconstructed, the main feature being their widening to the utmost dimensions quoted above for the new stock. As originally built the width was 8 feet 10 inches, so that a substantial gain in accommodation is obtained, a net increase of seating being 8 per car, that is 68 in all. Other rearrangements have been made in the doors, etc., to fit them for the electric services.

The widening of the frames was accomplished by adding brackets to the main solebars; these were welded. In addition, extension pieces had to be fixed on to the headstocks, with additional panels added at each of the end doors to make up for the extra width. Sliding doors were also introduced at suitable positions, the sides of the cars being cut into to allow of this. The roof did not present quite such a problem as would appear, indeed, much of it remains, extension pieces being added at the outer ends of the framing.

The bogies run unaltered, and at the time the conversion was made, the original state gas lighting was left, but as the re-built stock is added to the new electric motor cars, to form trailers, they will be given electric lighting.

A great feature in the re-construction has been the comparatively small increase of weight involved. Weighing 20 tons as built, the re-constructed cars are less than 22 tons in their later form.

The make-up of the new trains is interesting, the standard being one motor coach and one trailer; but, when the rush of traffic warrants increased accommodation, then the trains are linked up by combining two, three, and even four units, the latter making a long train of 8 coaches.

The new trains are at work upon the Illawarra-Bankstown services, and the total electric stock is sufficient to make up 37½ eight-car trains.

The control is on the electric-pneumatic system, and is provided with eight steps in the series, and five in the parallel. The trolley wire voltage is 1,500 D.C., but the switches, etc., in the driver's compartment carry only 36 volts, so that comparative safety is found in handling. The controller is fitted with a "dead man's handle," which cuts off the power automatically, and applies brakes should the driver release the handle, or even reduce his pressure upon it.

A clever arrangement also adds to the safety of train working. Control cannot be obtained on any motor coach until the train pipe is carrying sufficient air for braking purposes. Certain safety devices are added which makes the whole as near foolproof as can be.

Each train unit is driven by axle-hung motors, two in number, which develop 720 horse-power, the two 360 horse-power motors being geared to the axle.

To provide for possible failure in lighting, a special battery is carried under each motor, and this ensures a certain number of lights should the motor generator develop a fault. The rest of the lights are automatical-

ly disconnected in the event of the motor generator going out of action.

It should be added that the Chief Mechanical Engineer of the New South Wales Railways administration, Mr. E. E. Lucy is responsible for the carrying out of this portion of the electrification scheme.

Siam State Railway

Turning to Siam, we note the addition of some superb coaching stock for the Royal State Railways of that country.

Rarely has a finer saloon left these shores than the one supplied for the use of Royalty travelling upon the State Railways. A day saloon was specially designed and constructed in 1915. This splendid coach gave such satisfaction, that the Commissioner-General of the State Railways, H. R. H. Prince Purachatra, ordered another unit, which, whilst conforming to the exterior of the earlier built coach really forms a complement to that vehicle. The vehicle built in 1915 was for day use; now it was desired that a companion coach should be available for night journeys.

Hence the order to Messrs. Craven's Railway Carriage and Wagon Co. of Sheffield. The railways of Siam are laid out upon the meter gauge, therefore considerable ingenuity had to be exercised in getting ample accommodation in the coach, the lay-out comprising two complete suites. These are made up of three compartments each; a bed-room, dressing-room and bath-room being provided in each suite. The building of the car was supervised by the agents of the Royal State Railways, Messrs. C. P. Sandberg, of London.

The illustration of the beautifully proportioned coach shows a central entrance, and this forms a corridor from side to side, giving access right and left to either suite. Hand rails and steps are provided in order that access to the car may be had from rail level should the train not run along-side a platform.

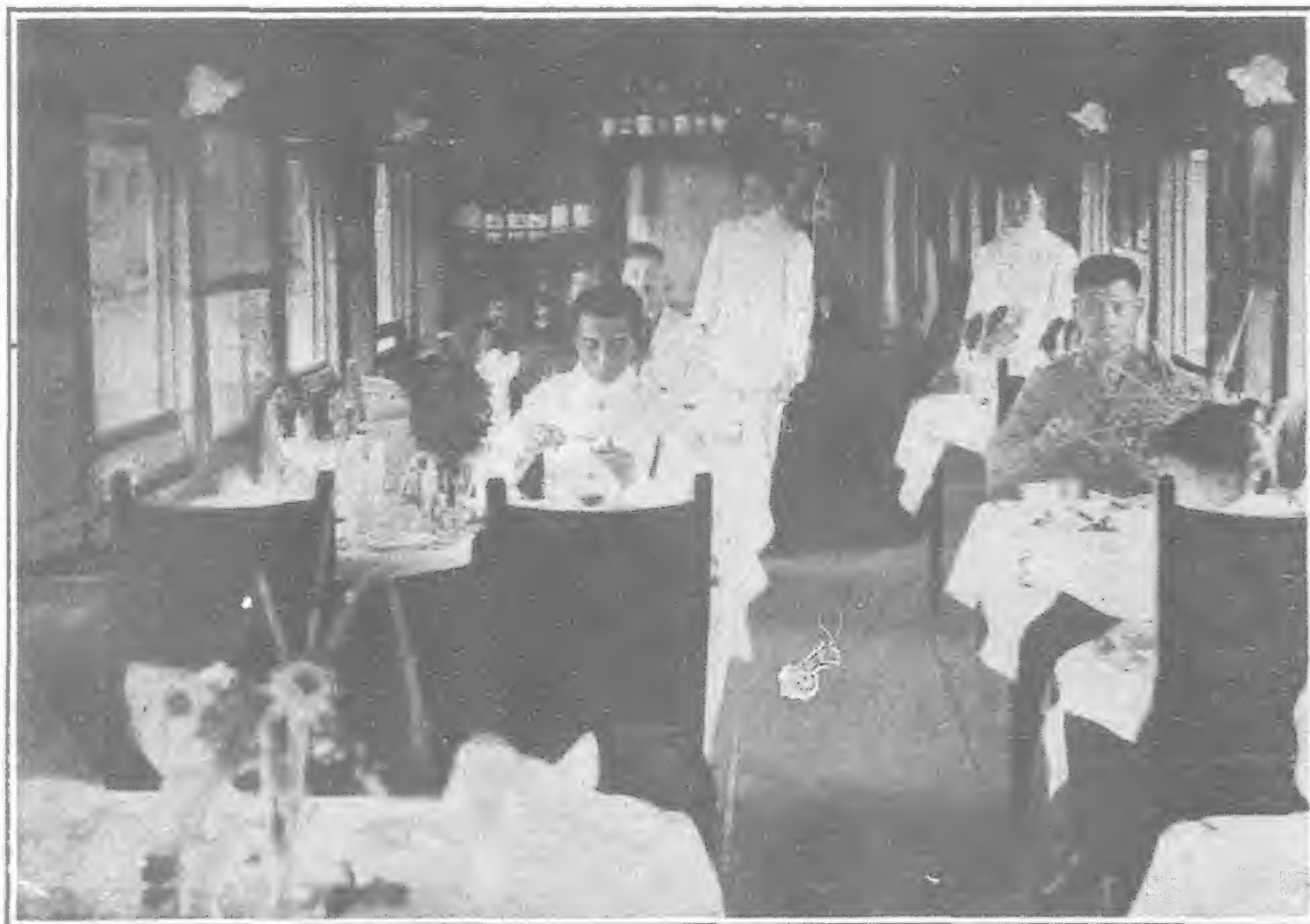
The two suites, though planned on similar lines, have this difference. The principal suite has the rooms, stretching right across the vehicle, the dressing-room being entered from the corridor, then bed-room is reached, and finally the bath-room. On the other side of the coach, the suite has a side corridor so that each room is available without having to pass through another, but necessarily the apartments are considerably less in dimensions. The corridor is necessary to link up with the Day Saloon, which has the usual collapsible covered gangway connection. There is also an emergency exit at the other end of this new saloon, and it is so arranged that, if need be, another car can be coupled up and a covered gangway provided, the latter being on the car which would be attached.

The automatic vacuum brake is used, and it is also adapted for use for passenger communication. Electric fittings are arranged throughout, and these comprise the usual electric lighting apparatus and bell installation.

The body framing is of teak, but the exterior panels are of steel

sheeting, whilst the body is insulated from the under-frame by rubber cushions of the latest design. Frameless-balanced glass windows are installed, and then teak louvre frames, covered with copper-wire gauze are added for ventilation purposes. All frames are provided with a locking apparatus, which can be operated only from the inside, and so get rid of nuisance which has been found in previous fittings.

The elliptical roof is also of special design, the main feature extractors in the roof are relied upon, but their work is aided by ceiling fans, and also by portable bracket



Inside a State Railway Restaurant Car

fans arranged upon the walls of the various compartments. The electric bells are connected to an indicator in the corridor, so that the attendant may know at once where he is required.

The furniture and decorations are beautifully harmonised, and are a tribute to British taste in design, and also skill in execution.

Thus, the walls of bed and dressing-rooms are pannelled in figured oak, whilst teak is used for corridor and vestibule. The period is Louis XVI. The ceilings, painted egg-shell white, are domed at the sides and end, and are enriched with well-chosen mouldings.

Cork lino is used throughout for the floors, but rich carpets and rugs are added in dressing and bed-rooms.

In the dressing-rooms we find fixed dressing tables and wardrobes, and these harmonise with the pannelling. Metal bedsteads are provided in the bed-rooms, and these are equipped with mosquito curtains.

The bath-rooms are finished in white enamel, the floors and walls being covered with glazed tiles, and all metal work is silver-plated.

In addition to a bath, a folding washstand is fitted, also W.C. with flushing cisterns, the water tanks being carried in the roof. The under-frame of this splendid car calls for special notice. Rolled steel sections strongly braced together by gusset plates and knees, are used, and the frame is trussed by four adjustable rods, which are anchored to the bolster cross-bars. These bear on to cast iron queen posts attached to the transverse joists, thus distributing the trussing over the whole width of the frame.

Central combined buffing and drawgear are fitted, whilst the total water tank capacity is 205 gallons.

Two four-wheel bogies of the swing bolster type, with side compensating beams, are used, and the wheels are of the rolled steel disc type. The exterior of this luxurious saloon is enamelled in light cream, picked out with gilt lining, and two gilt coats of arms add to the general effect of what is perhaps the handsomest car which has left England for many years. It should be added that all exterior metal fittings are of polished brass.

Messrs. Maple have been responsible for the interior furnishing, and the electrical equipment was supplied by J. Stone and Co.

The principal dimensions are as follows: Length over couplers 60 feet 4 inches, width 8 feet total extreme height 11 feet 8 inches, wheelbase 6 feet 7 inches, and the weight unloaded amounts to 32 tons.

The same builders have also supplied some fine coaching stock for the Royal State System of Siam, one of the principal vehicles being the exceptionally fine Inspection Car shown in our illustration. The general dimensions of this car are practically those of the Royal Saloon, but the weight is four tons less, whilst a steel under-frame is used, the body is constructed of wood. Pressed steel bogies are fitted, also vacuum and hand brakes of an improved type.

There is also an electric lighting and bell installation; added to these conveniences of travel is a complete telephone installation.

In the day apartment is found special recording apparatus which show variations in speed and brake pressure.

The interior is beautifully finished in polished oak, and in addition to the observation compartment, there are bed-rooms, office, and well-equipped bath-room provided.

An illustration is also given of the interior of a sleeping car whose dimensions correspond with those given for the Royal Saloon. This car weighs 29 tons, and provides sleeping accommodation for 12 passengers. The car is divided into six double-berth sleeping compartments as shown, and has two lavatories. The sleeping berths are of the convertible type, and are quickly adjusted for day use. The construction of these coaches follows that of the Observation car described above, save that the interior pannelling is of polished teak instead of oak.

The great feature of these sleeping cars is the successful arrangement of the ventilators and fans, otherwise a night journey in Siam would be something to be dreaded. All the stock is exceedingly well built and is giving great satisfaction.

Illustrations 4 and 5 show an exterior and interior of some new coaching stock for the Nigerian Railway of which particulars will be furnished in a later article.

An Electrified Gold Digger for Siberia

AN enormous placer dredge is on its way from the United States to Siberia where it will dig gold bearing dirt from the bed of a river. Steel buckets, 101 in number, each with a capacity of 17 cubic feet, will scrape along the river bed in an endless chain, scooping out the sand and gravel to the depth of 80 feet, and dropping it upon a revolving screen by which the gold bearing sand will be separated while the residue is carried by a conveyor and dumped 176 feet beyond the dredge.

The pay dirt is said to run in value from one dollar to eighty-five dollars per cubic yard, and the region is reported to be one of the richest gold fields of the world. A British-American company, the Lena Goldfields, Ltd., London, which holds a concession from the Soviet Government, ordered this dredge from the Bucyrus Company, Wisconsin, before the world war, and it has been held in storage by the manufacturer until recently, when its long journey of some 13,000 miles began.

The location of the gold area is in the neighborhood of Lake Baikal, which is in the southern part of Central Siberia, near the border of Mongolia, and to reach its destination the dredge will see a lot of travel and many varieties of transportation methods. It required about 75 freight cars to take its disassembled parts from the factory in Milwaukee to the

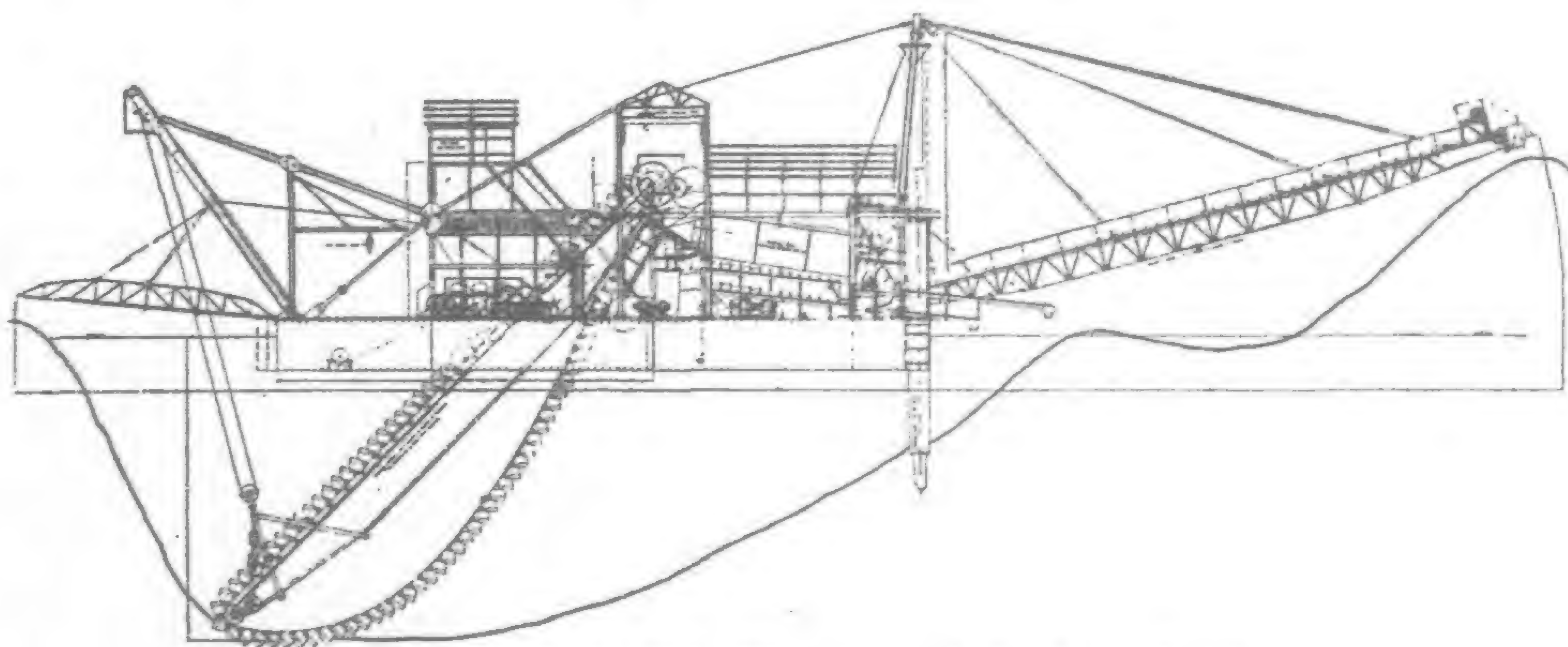
Atlantic Seaboard at Baltimore. In its ocean trip it skirted the coast of Norway, to be landed at Nurmansk in Northern Russia close to the Arctic Circle. By rail it will travel across Siberia, down to Irkutsk near the southern extremity of Lake Baikal.

It is in this far region that the great Lena River and its tributary, the Vitim, have their sources, flowing thence northward to the Arctic Ocean, and it is in the upper reaches of these rivers that the gold is being sought.

Reaching Irkutsk by rail, the much dismembered dredge will be transported overland through 200 miles of hilly, country devoid of roads, then by water route for 900 miles on the river Lena, and finally by eleven miles more of railroad to its destination, where it is scheduled to arrive in June of 1927. The dredge, which weighs 3,000 tons measures 170 feet in length of hull by 60 feet beam, and 13 feet 6 inches in depth. It will depend upon electric power for its operation, and induction motors made by

the General Electric Company, having a combined output of 1,335 h.p., will drive the machinery. It will operate 24 hours a day, requiring a crew of 12 men working in three 8-hour shifts.

The Lena Goldfields, Ltd., has three hydroelectric generating stations from which power will be available for the dredge.



Drawing of the Side Elevation of the Lena Dredge

P. & O. Adopts Turbine Electric Drive for New Passenger Liner*

Order Placed with British Thomson-Houston Company, Ltd. for Electrical Equipment

From an article in *The "Journal of Commerce," London*

FEW ship-building orders of recent years have excited greater interest in shipping and engineering circles than that occasioned by the contract which, as was recently announced in these columns *"Journal of Commerce"* the P. & O. Company have placed with Alexander Stephen & Sons.

The contract involves the building of a twin-screw mail and passenger liner of some 19,000 tons and fully 600 feet in length, with a speed of about 19 knots. It is in respect of the machinery installation, however, that the greatest interest has been created. The vessel will be propelled by turbine-electric machinery which will be supplied by the British Thomson-Houston Company, Ltd. The main propelling machinery will comprise two B.T.H. turbines coupled to electric generators, and motors, all of which will be accommodated in a common engine room. Independent turbine-generators will be supplied for the production of current for driving all auxiliary and deck machinery, the latter being operated in the constant current system.

For purposes of propulsion, alternating current will be used, while for lighting, heating and other domestic services, direct cur-

rent will be used. High pressure superheated steam will be generated in water tube boilers of the Yarrow type, working at about 400-lb. per square inch, and the boilers will be oil-fired on the Clyde system. A special feature of the design of the main propelling machinery is that either of the two turbines, when working alone, can be arranged to deliver power to both shafts sufficient to drive the vessel at a speed of 16½ knots. The steam supply to the turbines will be so arranged that only two main steam pipes connect the boilers to the turbines—a feature which should eliminate steam

radiation and transmission losses to a great extent. As is usual in electrically-propelled vessels, 100 per cent. astern power will be available and the complication of an astern turbine, with its well-known disadvantages will, as a natural sequence, be avoided.

Electric propulsion has already been established as a workable and dependable system. Representative examples of the scale on which the system has so far been applied in England under purely

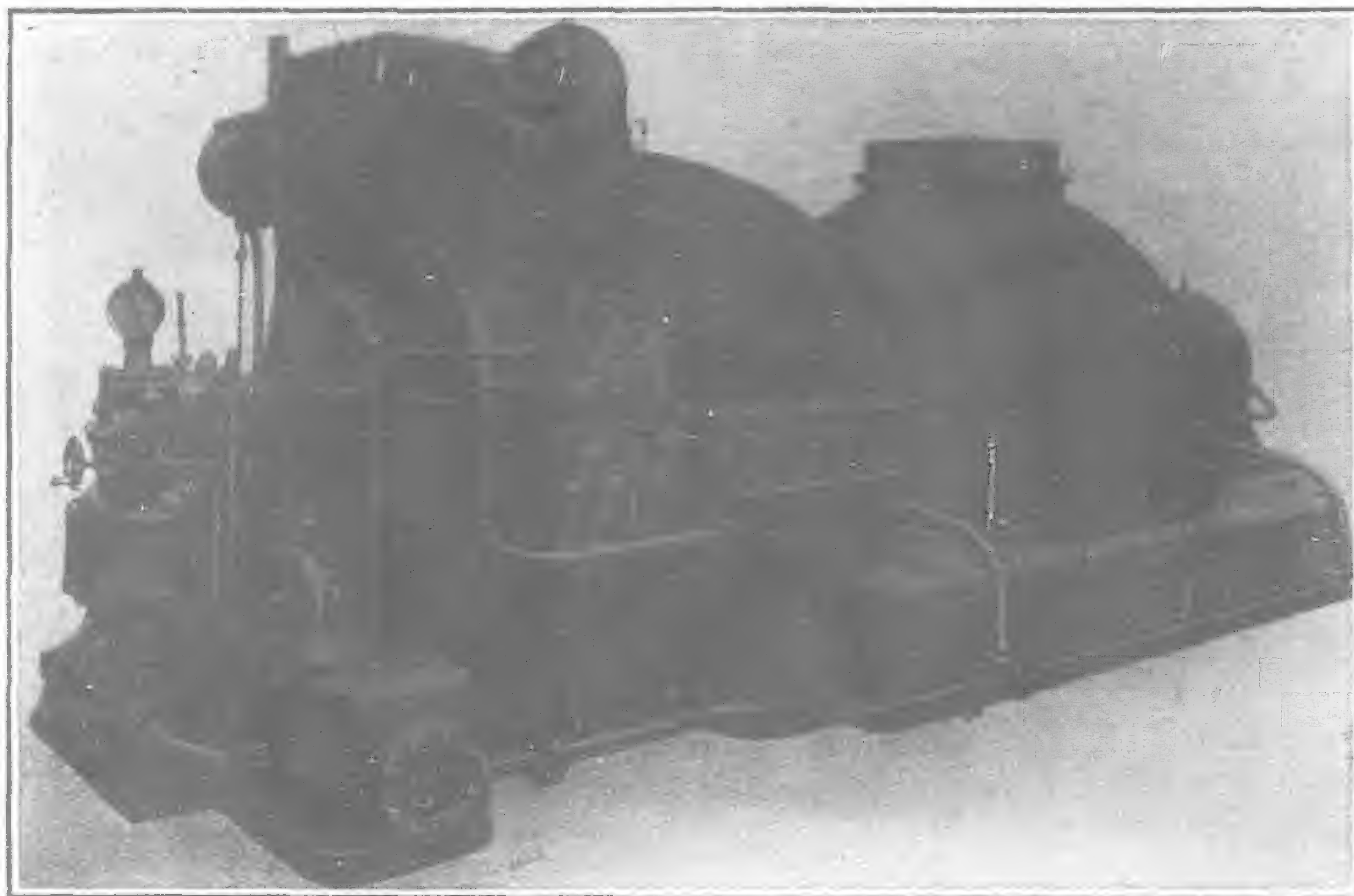


Fig. 1.—B.T.H. 1,500 KW. Turbo-Generator

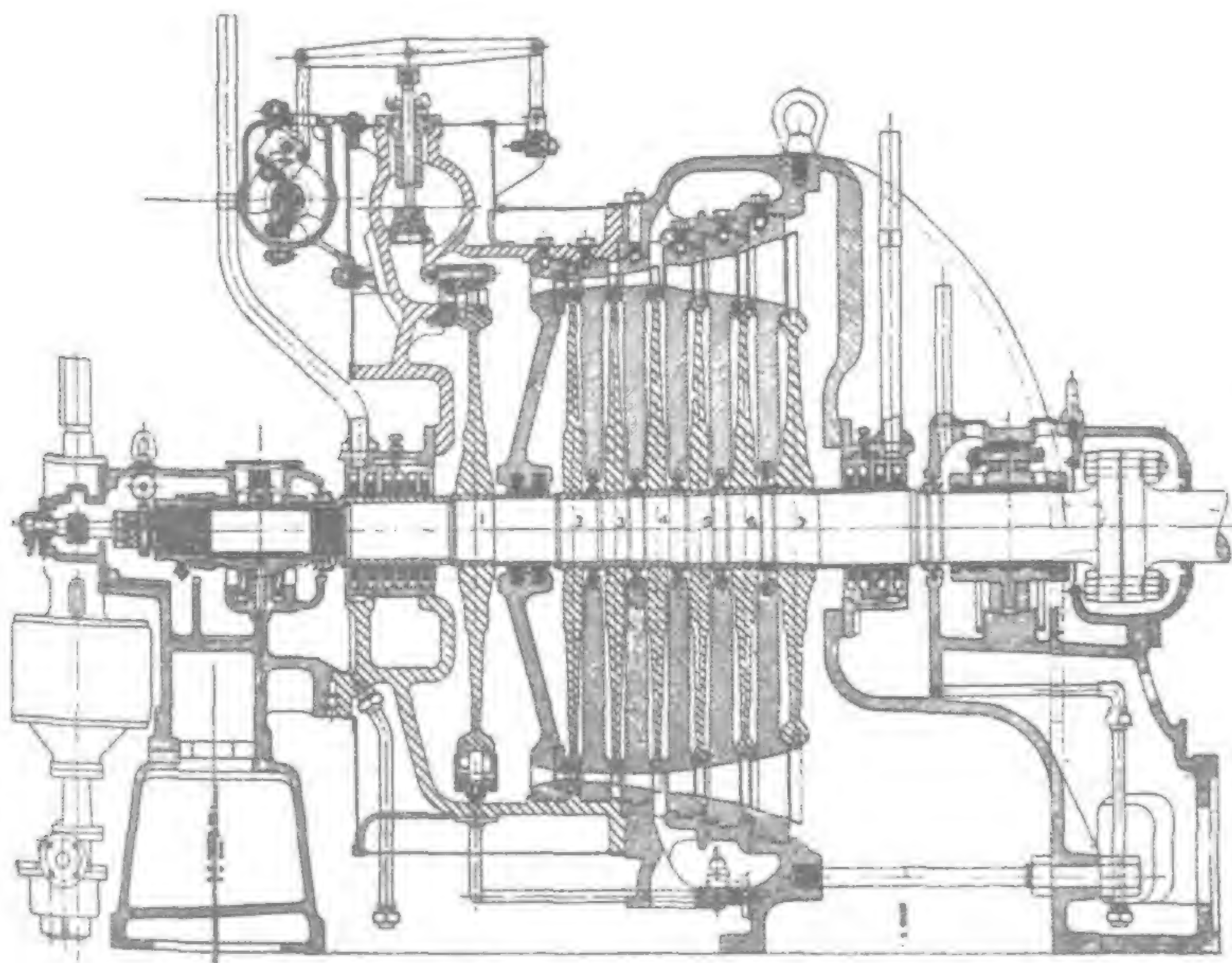


Fig. 2.—B.T.H. 1,500 KW. Turbo-Generator, Sectional Elevation of Steam End

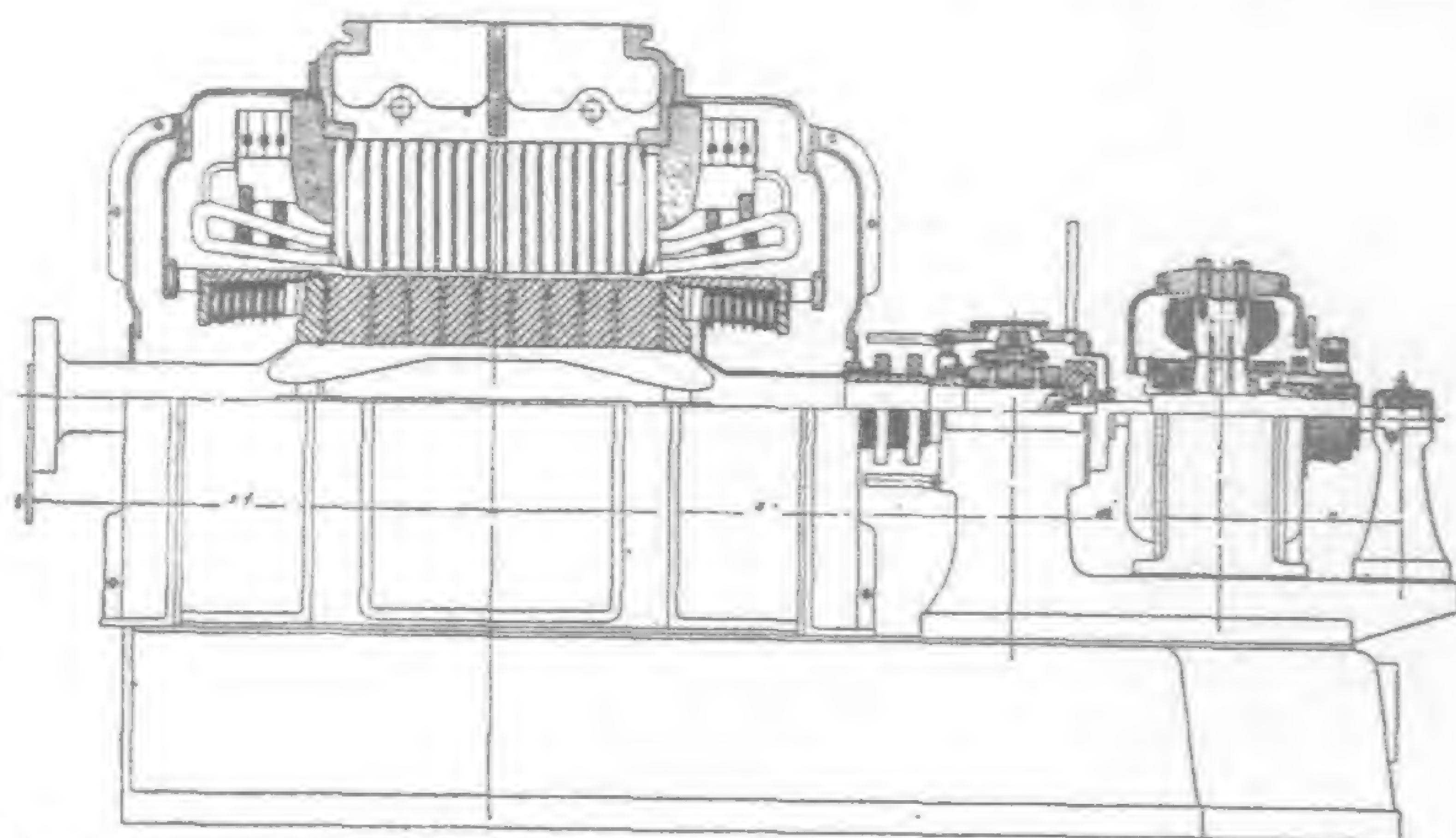


Fig. 3.—B.T.H. 1,500 KW. Turbo-Generator. Elevation and Section of Electrical End

merchant service conditions are the *San Benito*, a turbine electric cargo ship of about 4,000 tons gross, and the *La Playa*, a Diesel-electric ship of roughly the same size,* both vessels being owned by the United Fruit Company. There is also building at Greenock a 6,000-ton vessel designed for propulsion by a Diesel-electric installation which will be the most powerful of this type. In combining the high pressure water tube boiler with turbine electric

*The "Digest" August 1927.

propulsion, Lord Inchcape and his associates have shown an enterprise deserving of every credit.

From the mechanical standpoint the rotating masses of the turbine electric units present no complex balancing problems such as are encountered, and not by any means easily surmounted, in the heavy reciprocating engine. The virtual elimination of vibration assured in the new vessel cannot fail to give an added measure of comfort to the company's passenger clientele, and comfort can at times be equally as desirable as fractional fuel savings.

The new installation represents an attempt to duplicate shore station practice on board ship and, in so doing, the complication of mechanical reduction gears, presumably of the single-reduction type, has been eliminated. The astern turbine, necessary for the geared-turbine ship, has also been dispensed with, and whereas the steam pressure usual in typical geared-turbine steamers is around 200-250-lbs. per square inch, this has been raised to about 400-lbs.

For the new installation, operating as it will be in tropical temperatures, very efficient arrangements for cooling and ventilating the large generators and motors will be called for. In this connection the elaborate ventilating arrangements adopted in the 180,000-s.h.p. turbine electric machinery installation [General Electric] of the U.S. Navy aeroplane carriers *Saratoga* and *Lexington* are of interest. The hot air from the electrical units was passed through large capacity radiators cooled by means of circulating sea-water, and the cooled air was returned to the electrical units, passing through a complete cycle. In this way the objections

associated with the former method of ventilating the electrical units by means of a necessarily numerous system of air ducts led up to the deck, was eliminated and the possibility of sea-water finding access to the air ducts was by this means entirely overcome.

In departing so radically from established [English] practice the P. & O. Company, it may be assumed with safety, have been guided by the most sound and expert advice available. The high reputation of the owners, an alike of the ship and engine builders, is at once a hopeful augury for the success of the new vessel, the ultimate performance of which will be followed with the keenest interest.

* * *

To the closing paragraph, the writer of the foregoing might have added as a further "augury of success" the fact that turbine electric drive passed beyond its experimental stages a number of

years ago and is having a wide and successful adoption in the United States for all classes of ocean-going ships from the great airplane carriers and battleships of the United States Navy, down through the range of colliers, tankers, cargo ships and passenger liners. The adoption of turbine electric drive for the newest of its ships is but an indication that the P. & O. is in step with modern progress.

The apparatus to be furnished by the British Thomson-Houston Company includes two 9,000-kw., 3,000-volt, 3-phase turbine alternators, two main propelling motors of 8,500-s.h.p., 107-r.p.m., two motor-generator sets for excitation, and complete control mechanism for generators and motors.—EDITOR.

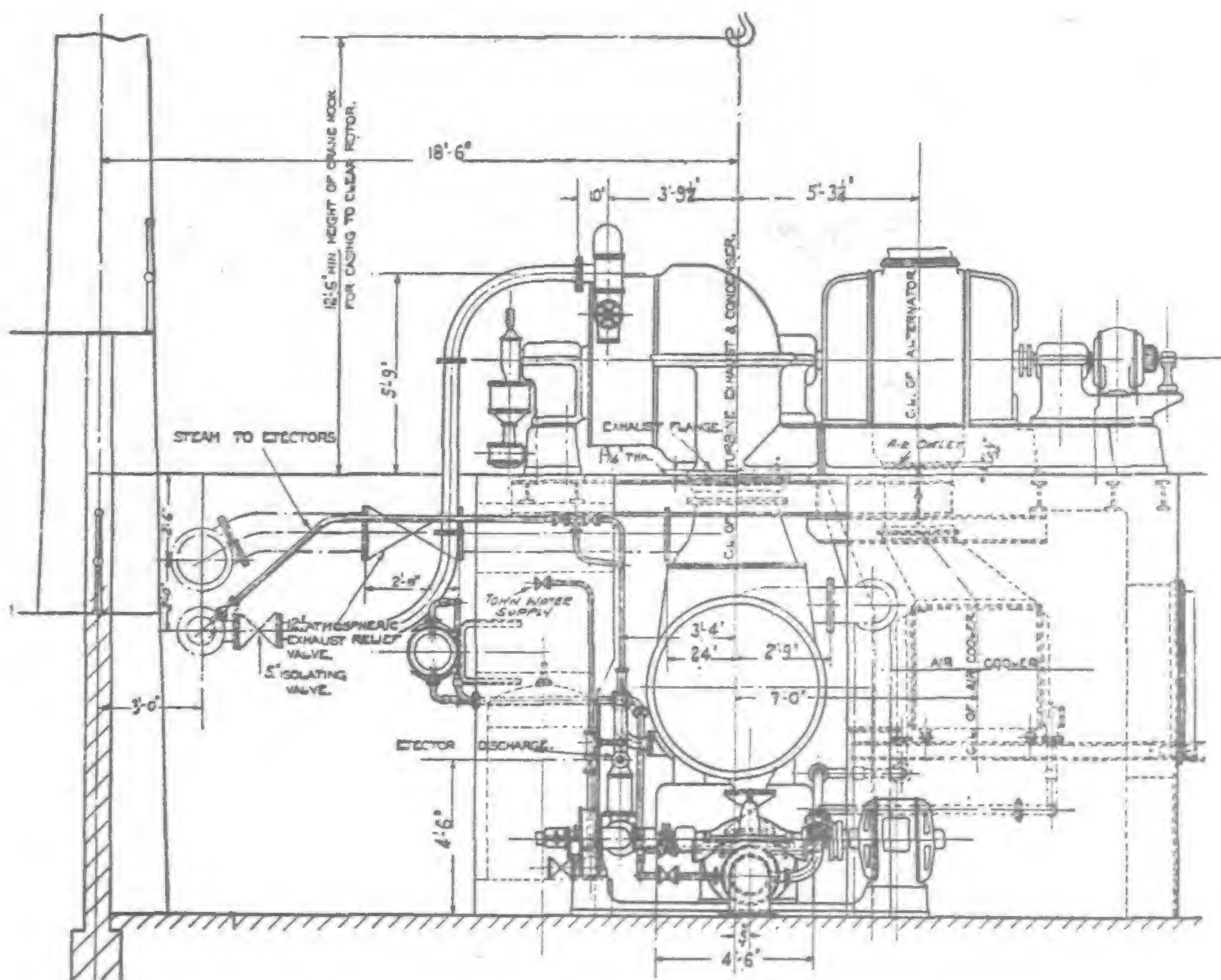


Fig. 4.—B.T.H. 1,500 KW. Turbo-Generator; General Arrangement Showing Positions of Condenser, Cooler, etc.

A Motor Boat's Exploit in China*

A 1,400-mile Trip With An Amateur Crew

WE have received particulars of the exciting part played by a Chinese river motor craft in the evacuation of Chungking during the recent disturbances. *Mei Lu*, the boat in question, is powered with a pair of 210 h.p. Gardner heavy oil engines, and until she was bought by her present owners, Messrs. Barry and Dodwell, Ltd., Chungking, she belonged to the Standard Oil Co.

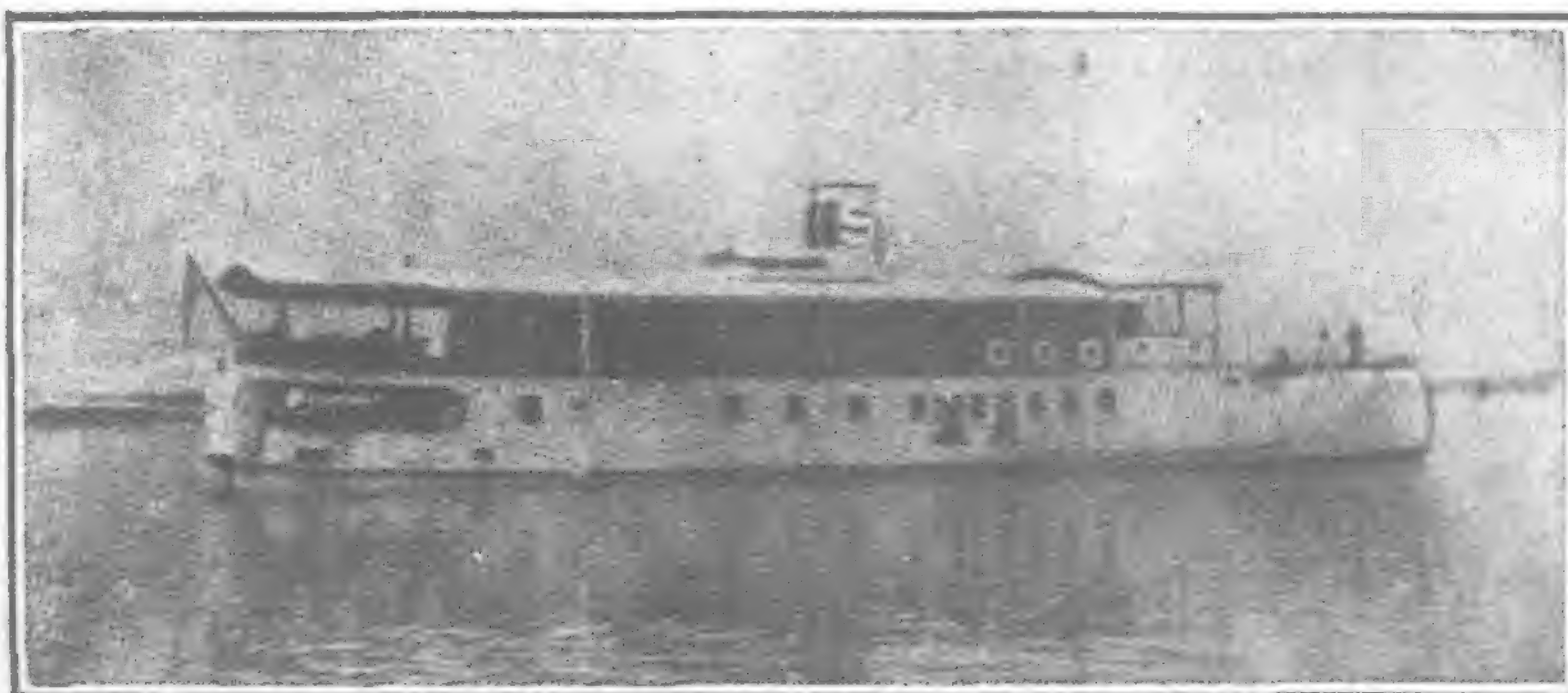
It appears that when conditions at Chungking became almost untenable so as to render the evacuation of the foreign residents necessary, it was decided to prepare the *Mei Lu* for departure, equip her with a native crew and hold her at the port as the last ship on which the remaining few could make their escape.

The Chinese crew, as soon as they saw what was afoot, demanded extra wages, and as these were refused they

immediately deserted the ship with the idea that the boat could not leave without them. But they had reckoned without the foreign passengers, and five of the civilians immediately came forward and offered to assist the engineer, working in two-hour shifts.

This is the first time in history that any vessel has been taken through the Gorges and rapids such a distance by a civilian crew, most of whom had never been in an engine room and the larger part of whom were accountants in various firms in Chungking.

The distance from Chungking to Shanghai is 1,400 miles, and although the boat was several times delayed by being shot at, the voyage was accomplished in 15 days, during which time the amateur engine-room staff developed into a crew second to none, showing the Chinese they were independent of their help.



The Chinese River Boat "Mei Lu"

* "The Motor Boat."

Manufacturing in the Philippines



UCH of the manufacturing and converting of materials in the Philippine Islands is carried on as home industry, and definite information covering these activities is generally lacking. The last effort to make a comprehensive survey is reported in the census of 1918, but substantial changes have occurred in local industrial conditions since that census was made. Such information as has become available indicates that rice milling, sugar milling, hemp stripping, copra drying, lumbering, and the manufacture of vegetable oil, desiccated coconut, and tobacco products are among the leading developments in the islands.

Rice Mills

Rice is not a factor among the export products of the Philippines, but it is by far the most important item in the daily life of the natives, and rice mills may be considered as the ranking industrial establishment of the islands. There are at present 820 mills in operation. A few of these employ between 50 and 100 laborers, but the majority are small and require no more than two workmen each. The milling centre is at Cabanatuan, in the central plain of Luzon, and the more important mills are located in that area. The Chinese control the rice trade of the islands and operate the greater part of the larger plants, although some of these are owned by natives. It has been estimated that the total capital investment in this industry amounts to more than \$100,000,000 and that these plants handle approximately 2,000,000 short tons of rough rice annually valued at nearly \$100,000,000.

Sugar Mills

The sugar mills account for the ranking export commodity of the islands and are of two classes, the antiquated muscovado mills producing crude brown sugar and the modern centrifugal mills producing a white sugar about 96 per cent pure. There are 34 modern sugar centrals in the Philippines, with an estimated capital investment of \$160,000,000, while the muscovado mills were reported by the census of 1918 as numbering more than 2,600. Shipments of sugar alone accounted for approximately 30 per cent. of the total export trade of the islands during 1925, apart from the substantial quantities consumed locally by the native population. Other centrifugal mills are at present under construction and still others are projected.

Hemp Stripping

The bulk of the abaca or hemp fiber produced is stripped by hand, but the use of machinery is increasing and there is at present one modern stripping machine in operation on a commercial scale. It is believed in the trade that others will follow

and that the production of hemp will thus be greatly increased at reduced costs. The export statistics show that the production of hemp is increasing very rapidly, and total exports during 1925 valued at nearly \$36,000,000 accounted for 24 per cent of the total overseas sales. It is estimated that there are at present 164 stripping plants and 101 baling plants in operation in the islands, but no estimate is available covering the capital invested. There are also six cordage factories operating in the territory with an estimated capital investment of \$1,750,000 that produced, during 1925, more than 7,000 metric tons of rope and cordage valued at \$2,235,000.

The production of knotted hemp and "sinamay" or abaca cloth is carried on as a home industry, while there are several hat factories and one braid factory using hemp fiber a raw material.

Coconut Products

Copra, drying in the sun or with smoke is conducted as a home industry, on most of the numerous small plantations located throughout the islands, but several mechanical dryers are now operating successfully and their use will doubtless be more extensive in time. Exports of copra are increasing each year, and during 1925 accounted for 11 per cent of the total.

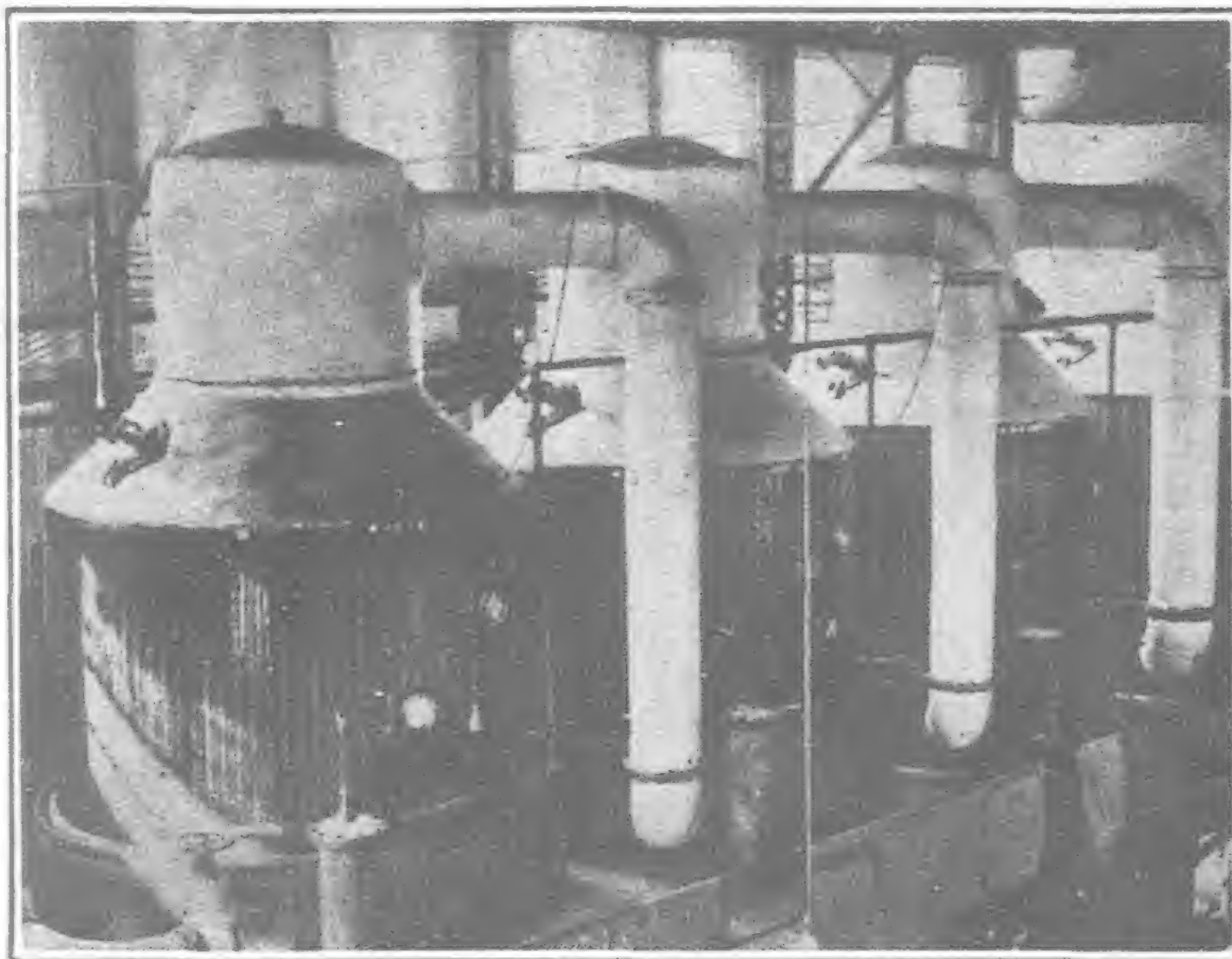
The production of coconut oil on a large scale is a comparatively recent development in the Philippine Islands and reached its peak in 1918, when 41 modern mills were in operation. This number was decreased during the depression following the war, and there are at present only seven in actual operation, that during 1925 exported oil valued at nearly \$30,000,000, representing 14 per cent of the total exports. This development is chiefly American and meets severe competition from the oil mills located in the United States, using copra imported from the Philippines.

The first exportation of desiccated coconut from the Philippines occurred during 1922 and was the result of the increase of the American import duty on imported desiccated coconut to 3½ cents a pound. Formerly the United States purchased this product almost exclusively from Ceylon, but the development of the industry in the Philippines has been very rapid and during 1925 shipments from the islands to the United States exceeded those from Ceylon for the first time. A total of more than 18,000,000 pounds of desiccated coconut valued at \$1,800,000 was shipped from the Philippines to the United

States during the first eight months of 1926, compared with 11,000,000 pounds valued at \$900,000 from Ceylon. There are at present eight desiccated coconut factories in the Philippine Islands with an estimated capital investment of \$2,000,000, but only five of these are in actual operations at this time.

Lumber Mills

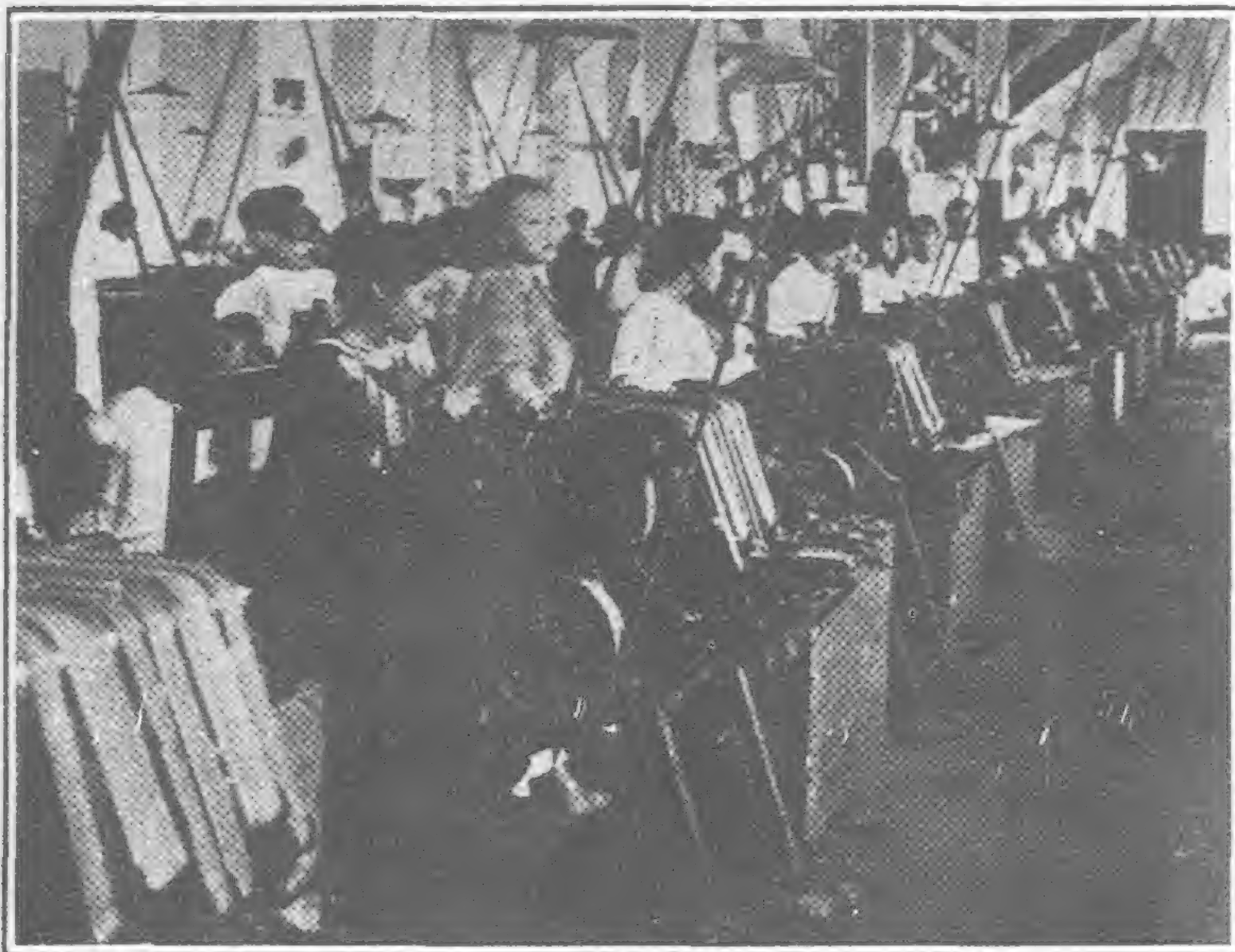
The development of the lumber industry



Modern Evaporating Plant Used at the San Carlos Sugar Factory



Furrowing Out for Sugar Cane by Means of Cable Plow



Photograph by the Bureau of Science.

Tobacco Stripping and Booking Machines in Operation

on a commercial scale has taken place since the inauguration of the American administration, but it is still underdeveloped when compared with the forest resources that are available. There are at present 64 sawmills in the Philippines operating under forest concessions, with an estimated investment of \$8,000,000. A total of 368,000,000 board feet, with a market value of approximately \$23,000,000, was cut from the forests of the Philippines during 1925, and it is estimated that between 75 and 80 per cent of the cut was handled by these sawmills. The Americans are the dominating nationality in this industry, but Spaniards, Filipinos and the Chinese are also factors.

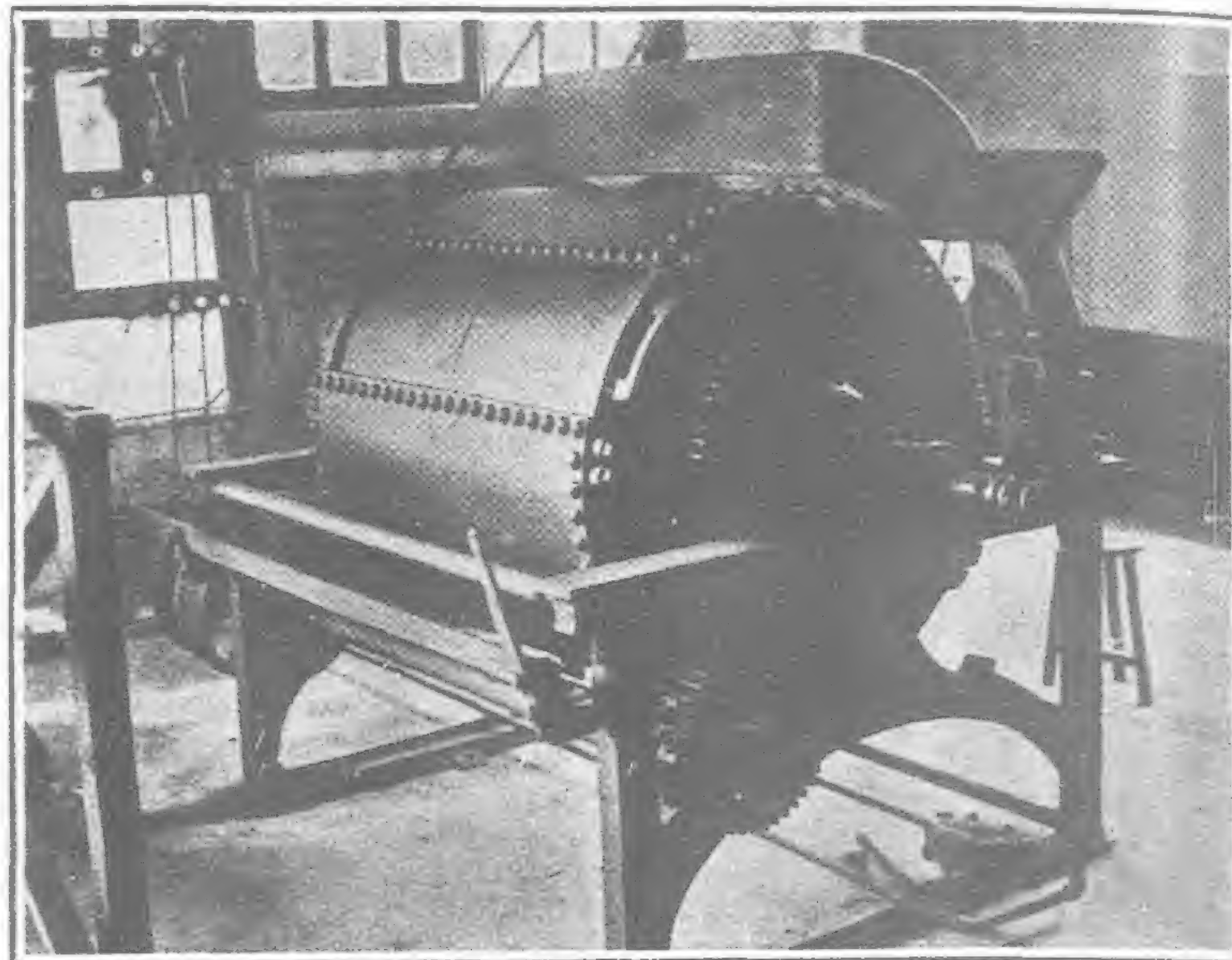
There are about 80 furniture factories manufacturing furniture chiefly for the domestic trade, about 150 carriage factories making the native two-wheeled conveyances, and 16 small shipbuilding establishments.

Tobacco Factories

Although the tobacco industry of the Philippines is more than three centuries old, tobacco was formerly exported as raw leaf, and the development of cigar and cigarette factories on the present large commercial scale did not take place until after the inauguration of the American administration. The bureau of commerce and industry reports that there are at present 88 cigar factories and 25 cigarette factories, with an estimated, capital investment of \$10,000,000, employing, between 18,000 and 19,000 workmen. A very substantial demand for Philippine cigars has been developed in the United States, and nearly 260,000,000 cigars were exported during 1925.

Distilleries

The manufacture of distilled liquors and alcohol has been carried on in the Philippines since early days, but did not assume any considerable importance until recent years. There are at present about 83 distilleries in the islands, with an estimated capital investment of \$7,500,000,



Photograph by the Bureau of Science.

A Type of Leaf Tobacco Sterilizing Machine Used in the Manila Cigar Factories

but the production of alcohol on a large scale is confined to 6 establishments.

This industry is controlled by the Chinese, and the important alcohol distilleries are, located at or near the important centrifugal sugar mills. Alcohol was originally distilled from the sap of the nipa palm, but with the development of the centrifugal sugar mills molasses became cheaper as a raw material and has superseded nipa sap almost entirely in the production of alcohol. During the year 1925 24,257,000 proof-liters of alcohol were produced, of which 2,890,000 were exported, entirely to China.

Embroidery Industry

Embroidery as a home industry in the Philippines had its origin during the Spanish regime in the convents and religious institutions, where the art was taught by Spanish nuns. During the past 25 years Americans have organized the industry on a commercial basis, and production has been greatly increased. In this industry, which employs about 50,000 persons, it is estimated that there is approximately \$7,500,000 invested. The material are usually issued from a central plant and paid for by the piece when returned. There are 18 plants of considerable importance, most of which are branches of firms in the United States, but there are also a number of small establishments selling their products to the larger exporters. Exports of embroidery during 1925 were valued at \$4,561,000, the bulk of which were purchased in the United States.

Shoe-making

Shoe-making in the Philippines is carried on both as a home industry and in modern shoe factories of considerable importance. Although there are approximately 250 small establishments where shoes are made by hand, there are only two large factories employing modern methods and equipment. The total investment is estimated



Copra Dryer

at \$1,750,000, and production during 1925 was valued at about the same amount.

The Chinese and Filipinos are the chief factors in the hand-made shoes industry, but both of the large modern factories are owned and operated by Americans. Notwithstanding the domestic production, importations of leather shoes during 1925 were valued at \$473,000, in addition to purchases of canvas shoes amounting to more than \$400,000 supplied almost entirely by the United States.

Cement Factories

There is but one cement factory in the Philippine Islands. This was organized in 1922 and is owned by the Philippine government. A privately owned cement company was incorporated during 1911, but after a short period of operation the project was abandoned. The existing cement plant, known as the Cebu Portland Cement Co., located in Cebu, represents a capital investment of \$1,375,000 and has a rated capacity of 1,000 barrels a day. Production during 1925 reached 283,000 barrels, valued at \$725,000. The plant has never shown a profit until very recently, and its sale to private interests, has been considered, though satisfactory negotiations have not yet been made.

Soap and Vegetable-Fats

The manufacture of soap is carried on both as a home and as a factory industry, but of approximately 86 establishments producing soap only two are using modern methods of manufacture. All these plants, with one exception, produce laundry soap only. The factory excepted manufactures both laundry and toilet soaps and a vegetable-fat product for cooking. The estimated investment in all soap-making and vegetable-fat establishments is \$1,750,000. One of the two modern factories is owned and operated by Americans, and the other is controlled by Swiss. Practically all the smaller establishments are owned by Chinese. The raw materials consist chiefly of domestic coconut oil and of caustic soda imported from the United States, the United Kingdom, and Japan. Notwithstanding the domestic output, statistics covering production of which are not available, soaps valued at \$506,000 were imported during 1925.

More than \$625,000 worth of lard and lard substitutes were purchased, chiefly from China.

Button Factories

The first button factory began operation in the Philippines during the year 1905, and there are at present two establishments with an estimated investment of \$225,000 producing buttons, chiefly from local shells. The insular bureau of commerce and industry reports that approximately 1,080,000 gross of buttons, valued at \$500,000 were produced during 1925. The industry is handicapped by the difficulty of obtaining at competitive prices a steady supply of the shells required.

Miscellaneous Industrial Plants

There is a great variety of articles manufactured in establishments which to some extent employ modern methods and equipment but which are comparatively unimportant when considered in relation to other national industries. Such plants include factories producing paint, matches, perfumes, textiles, confectionery, canned goods, and other articles. There are also a number of electric light and power plants, bottling works, and salt beds, and there is one gas plant.

Home Industries

The home industries of the Philippines constitute a very important part of the economic life of the archipelago. Some of these industries have been mentioned in former paragraphs. Among those not heretofore referred to should be mentioned hat making, candle making, tanning, production of porcelain and pottery, harness making, and the production of dyestuffs. The output of straw hats in the Philippine has become rather important during three recent years, and exports during 1925 exceeded \$2,000,000. These activities are generally engaged in by the Filipinos, although some of them are controlled by the Chinese.

Electrical Tin-Dredging Equipment

TIN mining in the Malay States, from which nearly 40 per cent. of the world's output of tin is obtained, has much to gain from increased application of electrical plant. It is of interest, therefore, to note that the use of electrically operated equipment supplied with power from electricity supply undertakings or from power stations of the mining companies is being extended and shows signs of proving an important factor in the further development of the industry.

A number of electrical equipments for tin mining plant have been supplied by the Metropolitan-Vickers Electrical Company, including two recent equipments for the Kamunting Tin Mining Company and the Kepong Dredging Company of the Federated Malay States. Both of the equipments mentioned are for the bucket dredging system of mining, in which the "Karang" or tin bearing gravel is excavated as in harbour dredging and passed through sluice boxes on the dredge, the waste material being discharged over the stern. This method of working has been widely adopted in recent years on account of its effectiveness and economy in dealing with low-lying deposits.

The dredge for the Kamunting Tin Mining Company is being built by Messrs. Cammell, Laird & Company of Birkenhead. The equipment which is being supplied by the Metropolitan Vickers Electrical Company includes transformers for power and lighting circuits on the dredge and 15 motors totalling about 550 h.p. for the dredge machinery. Electricity will be supplied from the mining company's own power house and transmitted to the dredge by means of a submerged cable at a pressure of 2,200 volts 3-phase 50 cycles. The transformers, which are oil immersed and self cooled, will give a 440 volt 3-phase supply for the motors and 110 volts single phase supply for lighting.

The motors are mainly of the slipring induction type the largest unit being for digging, 120 h.p. 730 r.p.m. with $2\frac{1}{2}$ to 1 reduction gear; for ladder hoist 75 h.p. 727 r.p.m. with 4 to 1 reduction gear and friction clutch; for mooring and warping winch 25 h.p. 720 r.p.m. with 10 to 1 reduction gear; for high pressure pump 150 h.p. 585 r.p.m.; and for low pressure pump 70 h.p. 290 r.p.m. The gears have been supplied by Messrs. Crofts Ltd. of Bedford and the main pumps by Messrs. W. H. Allen Sons & Company of Bedford.

The dredge for the Kepong Dredging Company is being built in Malay. The electrical equipment was ordered from the Metropolitan Vickers Electrical Company through Messrs. A. E. Mohring and Son, Consulting Engineers, of London, and includes 16 motors totalling about 550 h.p.

It is of special interest to note that the conditions of operation of electrical equipment in this work are unusually severe. The climate of the Malay Peninsula is moist and hot, the rainfall varying between 90 and 130 inches per annum, and the shade temperature often reaching 90°F. Thunderstorms are prevalent and severe, producing heavy electrical surges in electrical systems. In addition the motors especially are continually exposed to the splashing of gritty water and are often operated continuously night and day under heavy loads. It will be seen therefore that the highest standard of materials and workmanship is called for in the construction of the equipment to be used.

Further developments in the electrification of tin mining plant in Malay may be expected in view of provisions which are being made for electric power supply in the mining areas. An important scheme of this nature is being carried out by the Perak River Hydro Electric Company for the supply of electricity to the tin Mines of the Kinta Valley District. Power will be generated at a hydro electric station now being constructed at Chenderoh, near Penang. A 66,000 volt transmission line about 65 miles in length will carry the supply to a number of sub-stations feeding branch lines at 22,000 volts and further sub-stations will distribute the power at 6,600 volts to consumers. In this connection it is of interest to note that the contract for the whole of the outdoor switchgear, one of the largest contracts for outdoor electrical equipment ever placed with British Engineers, is being carried out by the Metropolitan Vickers Electrical Company. Mr. H. Eckart, Consulting Engineer to the Kamunting Tin Mining Company, is responsible for the complete engineering of the dredge and equipment. The arrangements in this country have been made on Mr. Eckart's behalf by Mr. C. F. Mackness, Consulting Engineer, of London.

Engineering Notes

Coal Mine at Kwankai.—A coal mine has been discovered at Kungkow Kwankai, Kirin province. Chiang Kwang-chiu and others have obtained permission from the provincial authorities to operate the mine with a capital of \$30,000.

Fushun Coal Output.—The output of the Fushun coal mines during the second quarter of this year amounted to 1,030,000 tons, showing an increase of 120,000 tons in comparison with that of the corresponding period of last year. Of the 1,030,000 tons 549,000 tons were exported to Japan, and 480,000 to other foreign countries.

C. E. R. To Instal Radio Receiving Sets.—According to Harbin reports, the Chinese Eastern Railway Co. has decided to instal radio receiving sets in the residences of the more important staff members and directors, as well as in the offices of the railway administration. Altogether 35 sets of the 6 tube type have been ordered. The installation will be gradually extended to other quarters in the near future.

Gold in Heilungkiang.—The production of gold by the Feng Yuan Company and the Hsing An Company which has contributed greatly to the prosperity of Aigun in the past few years, has greatly fallen off. To a large extent this may be attributed to the difficulty in getting workmen, as the conditions of pay and living at the mines are not sufficient to attract them to this remote frontier region. It may be surmised, however, that were the deposits rich enough, means could be found to bring more workmen here. Practically the only movements of treasure during the past year were in the form of gold from the mines, and that passing through the Customs (probably only a small proportion finding its way out of the port) for the years 1925 and 1926 amounted to the respective amounts of Hk. Tls. 2,728,234 and Hk. Tls. 1,060,093.

Electric Lighting Shows Big Growth.—Although Government figures are somewhat old and out of date, they are of interest for the broad outline they give of industrial conditions in this country. Concerning the electric industry in this country the Imperial Ministry of Industry and Commerce publishes statistics which show the following use of power in factories having five or more workmen in the six leading industrial centres of Tokyo, Osaka, Kyoto, Kanagawa Aichi Prefecture (Nagoya), and Hyogo Prefecture (Kobe).

Industries :	1919	1921	1923
Using steam, gas, oil and Japanese direct connected water wheels	253,713	197,843	190,964
	h.p.	h.p.	h.p.
Electric Motors :	520,491	564,532	585,504

The use of electric power in factories would be even more emphasized if the figures for the last few years were available.

The extended use of electric light in Japan accounts for the great increase in the capital invested in the electric power generating industry the last few years. In 1920 the total capital investment was distributed : Chemical industry Y.1,200,000,000 : Mining Industry : Y.4,400,000,000 : Machinery Manufacturing Y.900,000,000 : Electric Power Generating Industry : Y.1,300,000,000.

At the end of 1925 these figures had changed so that the electric power industry stood at the head of the list : Y.2,900,000,000 : Mining industry : Y.1,400,000,000 : Chemical industry, Y.1,300,000,000 : Machinery manufacturing industry, Y.1,000,000,000.

For a very considerable time it has been a well known fact that the electric power companies were about the only ones in Japan which could readily obtain needed financing both from the banks and the general investing public, which is not large. Power company dividends are rarely under 9 per cent. while many formerly first-class dividend payers, in which class only those companies able to pay over 10 or 12 per cent. were included, have fallen into difficulties and term after term of business has seen the dividend passed, or squeezed out by methods of finance which to say the least might be called invidious.

Wage Increases.—In view of the increasingly high cost of living in Shanghai and elsewhere, the Shanghai-Nanking Railway authorities increased the wages of the railway laborers from \$10 and \$12 to \$15, effective July 1, 1927. Likewise, the workers at the 45 lantern shops in Shanghai recently obtained a 20 to 30 per cent. increase in wages as the result of their joint demand to their employers for an increase. Their former wages ranged from \$5.00 to \$8.00 per month.

Electric Merger Problem.—Japanese newspapers and periodicals are filled with speculation regarding the merger of Tokyo Electric Light and Tokyo Electric Power. A plan has been drafted by Ichizo Kobayashi, who recently joined the directorate of Tokyo Light with Baron Seinosuke Goh and Mr. Ohashi. This is to be submitted to Mr. Seihin Ikeda, senior managing director of the Mitsui Bank, who is to be the intermediary between the two companies.

Two problems await solution. The first involves the number of directors and officials which Tokyo Power will be given in Tokyo Light after the merger. The second involves the share ratio for the merger.

Tokyo Power chiefs insist that Mr. Yasuzaemon Matsunaga, now its vice-president, be given the same position in Tokyo Light and that Managing Director Shindo be made business manager. Tokyo Light chiefs are opposed to either step. They would make Mr. Matsunaga a mere director. Mr. Shindo they do not want.

Tokyo Power insists that the merger should be consummated on the basis of 10 of its shares to 11 or 12 Tokyo Light Shares. Tokyo Light, on the other hand, wants 12 or 13 Tokyo Power shares for 10 Tokyo Light shares. No formula has been evolved.

Reports of the two companies for the last five terms follow :

TOKYO ELECTRIC LIGHT

(000 yen omitted)

			Paid-up capital	Plant assets	Profit
1st half, 1925	..	..	228,650	315,685	15,363
2nd half, 1925	..	..	266,962	404,271	15,793
1st half, 1926	..	..	345,535	526,245	19,207
2nd half, 1926	..	..	345,691	540,508	19,267
1st half, 1927	..	..	345,698	559,069	19,101

			Ratio of profit to paid-up capital per cent.	Ratio or profit to plant assets per cent.	Dividend rate per cent.
1st half, 1925	..	..	13.5	9.8	11.0
2nd half, 1925	..	..	11.8	7.8	11.0
1st half, 1926	..	..	11.1	7.3	11.0
2nd half, 1926	..	..	11.1	7.1	9.0
1st, half 1927	..	..	11.5	6.8	9.0

TOKYO ELECTRIC POWER

			Paid-up capital	Plant assets	Profit
1st half, 1925	..	..	28,000	63,725	1,392
2nd half, 1925	..	..	28,000	69,544	1,463
1st half, 1926	..	..	39,750	83,346	1,966
2nd half, 1926	..	..	51,500	116,766	2,677
1st half, 1927	..	..	68,217	135,135	3,070

			Ratio of profit to paid-up capital per cent.	Ratio or profit to plant assets per cent.	Dividend rate per cent.
1st half, 1925	..	..	9.9	4.4	8.0
2nd half, 1925	..	..	10.4	4.2	8.2
1st half, 1926	..	..	9.9	4.7	9.0
2nd half, 1926	..	..	10.4	4.6	9.0
1st half, 1927	..	..	9.0	4.6	8.0

Tientu Railway.—The Tientu Railway had a bad year in 1926. The uncertain performance of the engines and the poor condition of the rolling-stock suggest a need of repairs and replacements on a large scale; but funds are lacking and little can be done in this direction for the present. The bridge over the Tumen now being built at K'aishant'un will enable through loading between Lung-chingtsun and Kainei, and this should improve the company's business. The increase in both pack-animals and carts reporting to the Customs is very considerable. During the busy season cart transport, though more expensive than railway transport, was generally preferred by importers as being quicker and more reliable. —*Hungchun Customs Report, 1926.*

Celluloid Manufacture in China.—The Yung Woo Company is the pioneer of celluloid manufacturers in Shanghai. It was first established in December, 1927, to manufacture cosmetics, which are sold under the trade mark of "The Goddess of the Moon" with an initial capital of \$50,000. Later, in January, 1926, the company erected at a cost of \$80,000 a factory covering 7 mow of land at Kung Hsing Chiao, West Pao Hsing Road, Chapei, Shanghai, for the sole purpose of manufacturing celluloid. It employs 40 workers and produces an average of 150 pounds of celluloid a day, sold from \$1.50 to \$2.50 per pound. It maintains three departments: spectacle frames department, which is equipped with three machines and manufactures spectacle frames of imitation tortoise shell; toy department, which is equipped with four machines and manufactures all kinds of celluloid toys; and the ornament department, which is equipped with five machines and manufactures celluloid caskets, boxes, and chests of all sizes and shapes for decorative purposes. The company is planning to produce motion picture films. The sales office is located at Tsai Shen Lung, Min Chu Chieh, Old North Gate, Shanghai. The general manager is Yeh Chung-t'ing.

Kanegafuchi Colony.—The proposed plan for the colonization of Brazil by the Kanegafuchi Spinning Company is making headway, according to a report submitted by Mr. Hachiro Fukuhara, director of the company, who personally inspected that country in 1925 in connection with this scheme. The company spent Y.80,000, in investigation. The Para State Government of Brazil has offered free of charge a large tract of land on condition that the company undertakes colonization there. Of this, 800,000 chobu, or about 2,000,000 acres, is to be cultivated. Hospitals, schools and other buildings are to be erected. This enterprise will cost about Y.10,000,000. It is undecided yet whether the new colonization company is to be capitalized at Y.10,000,000, fully paid-up, or Y.40,000,000, a quarter paid up.

Mr. Sanji Muto, president of the Kanegafuchi interests, said that the proposed enterprise was not initiated by his company but, as is it important for the country, the Kanegafuchi authorities intend to push the plan. The contract signed by the Para State Government will have to be fulfilled before next October, Mr. Muto continued, but if the new company cannot be incorporated, the extension of the term of contract is to be negotiated to the Kanegafuchi Spinning Company through the Foreign Office. Mr. Muto asserted that he has no idea of receiving a subsidy from the Japanese Government and that a dividend of 10 per cent. or so can be declared on the completion of this plan.

New Construction in Manchuria.—With a view to stimulating contracts for railway construction in the Province of Kirin, the Chinese and Japanese subjects resident in that province have opened a railway engineering works in Kirin with a capital of Y.10,000,000, one-quarter of which was paid up on the inauguration of the company on December 21, 1926.

A syndicate has been formed in Fengtien Province with the object of building a light railway from Fuchou to Kaifeng, a distance of about 60 miles, so as to facilitate the transportation of salt. Permission has already been obtained from the authorities, and it is reported that construction work will be started immediately.

The Mukden-Hailung Railway has now been opened as far as Tsingyuan. The whole line is over 150 miles in length, and traverses mountainous regions involving the construction of two tunnels, 142 bridges and over 130 culverts. The major portion of this work has been completed, and it is expected that the whole line will be open to traffic within two or three months.

It has been definitely decided to construct a railway from Hailung, the terminus of the Mukden-Hailung Railway now under construction, to Kirin, which is now the terminus of the Kirin-Changchun Railway, and which will be the terminus of the Kirin-Tunghwa Railway, also now under construction.

CHINESE EASTERN RAILWAY.

The Chinese Eastern Railway carried 256,000,000 poods of freight and 3,250,000 passengers in 1926, as compared with 207,000,000 poods of freight and 2,454,000 passengers in the previous year. A pood is the Russian equivalent of 36-lb.

EMIGRANT TRAFFIC.

The emigration of Shantung and Chihli coolies to North Manchuria, as reported in my previous letter, has been stopped by the Manchurian authorities, who contend that these coolies might be used in military operations on the part of Soviet Russia against Manchuria. It is estimated that 500 coolies a day passed into Siberia prior to the enforcement of the emigration restrictions.

PURGING THE CHINESE EASTERN RAILWAY OF COMMUNISTS.

The Chinese authorities in Manchuria are extremely incensed at the recent disclosure of arms and incriminating literature in the Soviet Legation at Peking, and it is predicted that Marshal Chang Tso-lin will seize the Chinese Eastern Railway and eject the Soviet representatives. The departments under the control of the Soviets have long been used for propaganda purposes, and communistic principles have been taught in the railway schools. With the object of paralysing the service in case the Chinese authorities proceed with the above intention those in charge of fuel stations have reduced the fuel supplies to a minimum.

INCREASE OF RATES AND FARES ON KIAOCHOW-TSINAN LINE.

Owing to financial difficulties consequent on the continual civil war, the Kiaochow-Tsinan Railway has, with the joint approval of the Shantung Military and Civil Governors and the Ministry of Communications, enforced as from May 1 an increase of 30 per cent. on passenger fares and 20 per cent. on goods rates.

The Shanghai-Nanking Line is also contemplating an increase in rates and fares for the same reason.

PEKING-HANKOW RAILWAY.

The Northern Section of the Peking-Hankow line has been so much improved within the last few months of Fengtien Administration that it can now cover expenses, and in spite of the heavy military transportation, has at its disposal some 350 to 400 wagons. The repairs to the damaged Yellow River Bridge, the laying of a new stretch of track at points where serious derailments have been brought about by military sabotage, and the repairs to the telegraphic and telephonic lines, have all been completed.

ROLLING-STOCK ON THE GOVERNMENT RAILWAYS.

According to statistics compiled by the Ministry of Communications, the Tientsin-Pukow line originally had 385 passenger cars, 2,088 wagons and 136 engines, of which 100 passenger cars and 539 wagons have been taken to other lines, while a number of other railways' cars have been transferred to this line.

The Peking-Mukden Railway originally had 364 passenger cars, 4,412 wagons and 236 engines, out of which 176 passenger cars, 2,759 wagons and 52 engines have been transferred to other railways, while a number of cars belonging to other railways are now running on the Peking-Mukden line. Taken as a whole, however, the amount of rolling-stock on both lines has been considerably reduced as a result of military operations.

RETURN OF ARMoured CARS TO THE TIENSIN-PUKOW LINE.

The armoured cars which were recently ferried across the Yangtze River at Nanking from the Tientsin-Pukow line to the Shanghai-Nanking line by the Northerners were all captured by the Nationalists and are now being returned to the Tientsin-Pukow line to assist the latter against the retreating Northerners. An effort has been made by the Nationalists to arrange for the transfer of Shanghai-Nanking line engines and rolling-stock to the Tientsin-Pukow line, but in view of the fact that the whole property of the Shanghai-Nanking line is mortgaged to British interests as security on the loan, the railway authorities cannot see their way to accommodating the Nationalists.

Toho.—The Toho Denryoku K.K. is to purchase one 5,000-kw synchronous advancer for its Kyushu transmission system.

Hokkaido.—The Electric Light Co. is to install a new 3,000-kw turbo-alternator, switchgear and transformers at a cost of about 400,000 yen.

Mukden-Hailung Railway Opens for Traffic.—The newly built railway from Mukden to Hailung Fengtien province, was opened for traffic on September 3.

Nan Chi Steamship Co. Approved.—The Nan Chi Steamship Company organised by the oversea Chinese in Peru has been approved by the Ministry of Communications.

Kizu-gawa.—Work on the new generating station of the Ujigawa Electric Co. is progressing satisfactorily, and it is expected that the first of the two 30,000-kw generators will be put in operation in August.

Chung Hsin Coal Mining Co. Suspends Operation.—The Chung Hsin Coal Mining Company at Lincheng, Shantung province, has suspended operations. All employees were given three months' pay in lieu of notice.

Underground Cables Planned.—A decision has been reached by the directors of the Peking Electric Light Co., Ltd., to change all the street overhead wirings into underground cables in order to minimize danger. Work will soon commence.

Route of Ssu-Tao Railway Extension Altered.—The extension north of Taonan to Gokiol of the Ssupingchieh-Taonan Railway originally covering a distance of 350 miles is now being re-surveyed with a view to shortening the length.

Tientsin Automatic Telephone.—The Tientsin Automatic Telephone Exchange will commence operation from October 1, 1927. Subscribers with the east office and in Nos. 1 and 3 Special Areas will be privileged to use these automatic machines.

Woollen Mill in Suiyuan.—Ho Chung-yun a Shantung merchant, has raised \$100,000 for the establishment of a woollen mill in Suiyuan. An application to this effect has already been addressed to the Ministry of Industries for registration.

Section of Kirin-Tunhwa Line Completed.—The construction of the first section of the Kirin-Tunhwa Railway has been completed and will be opened to traffic on and from October 1, 1927. Regulations for transportation of goods and passengers are being drafted.

Electricity Supply to Industries in Peking.—At the Shareholders' Meeting held on June 26, 1927, the Peking Electric Light Co., Ltd., decided to inaugurate a service of supplying electricity to industrial firms at a graded charge. The service will begin on and from October 1st, 1927.

Harbin-Fuyu Railway Contemplated.—To complete the railway building plan in western Manchuria, the Fengtien provincial authorities have decided to build another line between Harbin and Fuyu thus linking up with the Taonan-Fuyu branch. Survey work will be undertaken by the staff of the Ssupingchieh-Taonan Railway Administration.

New Iron and Coal Mines.—In the district of Lopei near Heiho, a new coal mine has been discovered which promises to produce coal of good quality. An iron deposit exists 300 li south-east of Heiho.

Taonan-Tsitsihar Railway.—It is reported that arrangements have now been made to have the Taonan-Angangchi Railway extended to Tsitsihar by an elevated track over the Chinese Eastern Railway. This settles a very sore point between the Chinese authorities and those of the Chinese Eastern Railway.

New Light Railway in Manchuria Planned.—The Chinese Chamber of Commerce and the Japanese Stock Exchange of Kungchuling Fengtien province, are raising a joint capital of \$450,000 to build a light railway from Kungchuling to Itungchow a distance of 30 miles.

Shanghai-Nanking Telephone.—To facilitate intelligence between Nanking and various cities along the Shanghai-Nanking Line, the Shanghai Chinese Telephone Company is now undertaking to construct the unfinished section of Shanghai-Nanking Long Distance Telephone Service between Wusih and Nanking. Its construction is fast approaching completion, and in early November, the service will be open to public use. The Company is also drafting the schedule of charges, and will presently submit the same to the the Ministry of Communications for approval.—*Kuo Min News Agency.*

Motor Service in Sinkiang.—News has been received by the Ministry of Communications that in order to facilitate transportation, the Sinkiang Provincial Administration has decided to establish motor transportation services at various places and has made arrangements to purchase motor trucks, lorries and buses from Soviet Russia for the service at Tacheng, and also motor cars from Tientsin for long distance travel from the provincial capital. These motor cars have already been delivered at Tacheng, but owing to the bad condition of the roads, the motor car services will not begin until repairs have been made.

Nanking Wireless.—To facilitate intelligence between the Capital and various important cities under the Nationalist control, the Military Council has ordered the installation of a Short Wave Wireless Station in the West Garden of the Council's Headquarters. The installation which had been going on for some time was completed yesterday. It is reported that although the Station is equipped with only 100 Watt's Power, it can communicate with the different Stations in Shanghai, Ningpo, Loyang, Kwangtung Amoy and as far as the Philippine Islands. Since its installation, tests have been made and the result proved highly satisfactory. It is learned that for the time being, the Station will only transmit military and political messages, but it is hoped that it may also open to commercial use in future.—*Kuo Min News Agency.*

Nationalist Government Labor Bureau.—The Nationalist Government in Nanking has started organizing a Labor Bureau with three Departments—General Affairs, Administrative, and Statistics. The first looks after the funds, documents, and other general matters of the Bureau. The second department is to take care of labor education, sanitation, and insurance, industrial accidents, arbitration in labor disputes, guidance to laborers in the organisation of unions, and making connections with foreign and international labor organisations. It has also authority to inspect factories for the enforcement of factory legislation. The third department will compile all kinds of labor statistics, conduct social research in connection with labor questions, and issue publications on these subjects. A committee has been appointed and a preparation office established to carry out the plan.

Chinese Eastern Railway.—The Chinese Eastern Railway statistics show that they carried 256 million poods of goods during 1926, as compared with 207 million poods in 1925. Year by year the traffic increases and the crops show larger figures, thus proving that the district is advancing rapidly. It has been said that the soya bean was the making of Manchuria. Since 1920 deliveries of beans from Manchuria have grown more than one and a half times, the greatest advance in bean cultivation having been made in the north within the area lying contiguous to the Chinese Eastern Railway. The territory promises to provide foreign markets with no less than 180 million poods of surplus grain produce. Not a few factors unfavorable to rural farm industry remain still to be considered, the first in importance being the extreme pressure exerted upon this industry by the increased imposition of taxes, as evidenced by the land tax itself, and dues imposed on the trade in grain. Chronic fluctuations in the exchange value of the local paper dollar have also greatly influenced the grain market, and, although during the current year depredation due to *hung-hu-tzu* has significantly decreased, it has as yet not totally disappeared.